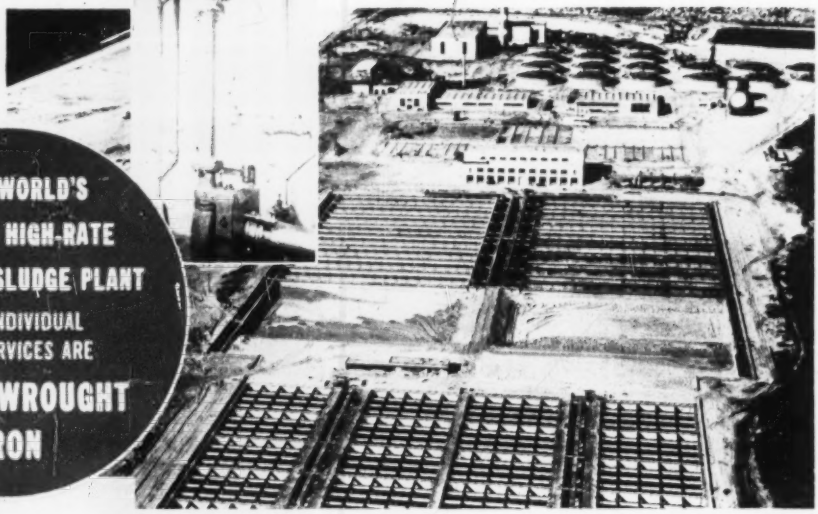
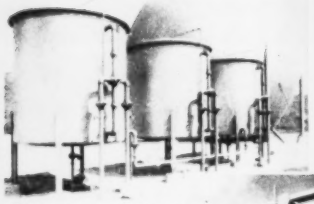
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

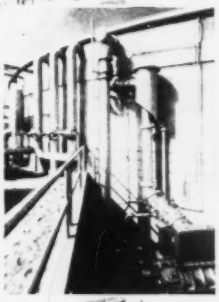
Pump room in Headworks Building showing genuine wrought iron sump pump and grit pump discharge pipe, and effluent wash water lines.



In the WORLD'S LARGEST HIGH-RATE ACTIVATED SLUDGE PLANT 51 INDIVIDUAL SERVICES ARE BYERS WROUGHT IRON



Showing genuine wrought iron water, gas and air lines leading into gas purifier.



Showing genuine wrought iron vents, water, effluent, and gas manometer lines on one of the 18 digester tanks.

Showing genuine wrought iron weir plates in final settling tanks at sludge plant.

Covering 76 acres, this $41,000,000.00 Hyperion sewage treatment plant of the City of Los Angeles is the world's largest treatment works using high-rate activated sludge process combined with sludge digestion, power generation, and fertilizer production.

In the design and work planning, engineers under Lloyd Aldrich, City Engineer, took decisive steps to forestall excessive maintenance and premature failure by specifying genuine wrought iron for 51 individual services where corrosion is a threat to durability. In the Primary Settling System, Digestion System, Power and Boiler Plant, Aeration System, General Piping System, Final Settling System, Elutriation System, and Ocean Outfall Sewer, genuine wrought iron safeguards a wide range of services against corrosion hazards. More than 141 tons of Byers Wrought Iron was used in fresh water lines, sump pump discharge lines, weir plates, condensate piping, instrument air piping, down spouts, flushing lines, air lines, underground piping, bearing plates, and many other services too numerous to list. Metcalf & Eddy of Boston were Consulting Sanitary Engineers; Merrill Butler, Deputy Engineer in charge of design; E. G. Studley, Engineer of Sewer Design; C. L. Bell, Projects Coordinating Engineer; G. A. Parkes, Senior Treatment Plant Design Engineer; and F. M. Darnell, Senior Administrative Engineer. The plant is being operated by the Bureau of Engineering.

The unique structure and composition of Byers Wrought Iron provides the needed service qualities for these punishing applications. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and "detour" corrosive attack. They also help anchor the initial protective scale, which shields the underlying metal.

Our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS, gives some helpful information on how to reduce repairs and maintenance. Write for a copy.

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 147 JULY 5, 1951 No. 1

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Triple water diversion for Brazil power 28

Here's an answer to how much prestress? ..... P. W. Abeles 32

Key California steam power plant ..... W. L. Dickey, C. W. Appleford 35

First prestressed piles carry tank platform ..... J. T. Parrett 38

How to flocculate greases ..... H. F. Ludwig, R. G. Ludwig 40

Civil-defense-conscious suburb readies water supply 43

Perspective—PNYA—Builder of public projects 128

DEPARTMENTS

Construction Week	17	Men and Jobs	60
Scoreboard	19	Education, Research	68
Editorials	21	Meetings	75
News of the Week	23	Obituaries	78
Reader Comment	44	Labor	81
Field and Office	47	Construction Business	83
Municipal	48	Material Prices	85
Foreign	54	Construction Reports	90

New Products 118

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Managing Editor—Eugene E. Halmos, Jr.

Associate Editors—*New York*, V. T. Boughton (senior associate), L. F. Angstadt, R. H. Dodds, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, L. L. Wise; *Washington*, V. B. Smith.

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Contributing Editor—N. A. Bowers.

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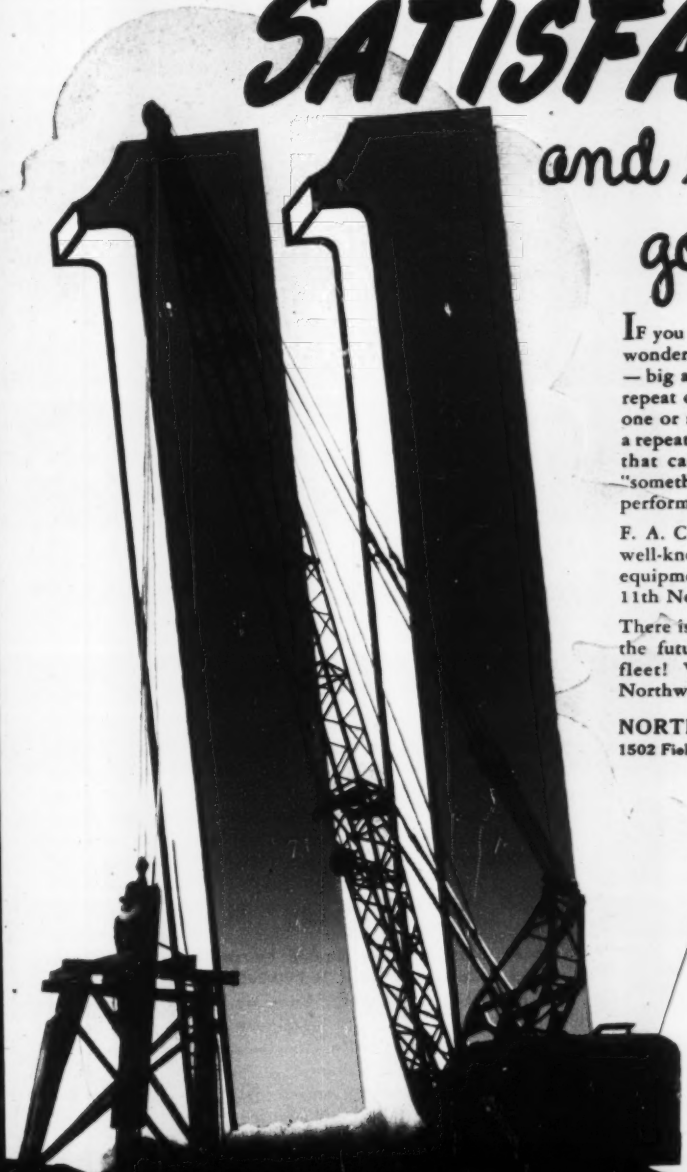
and repeat orders go together!



IF you have never used a Northwest perhaps you've wondered why year after year so many contractors, — big and little contractors that make money — have repeat ordered on Northwest equipment. Since 1925 one or more Northwests out of every three has been a repeat order. You'll agree that a piece of equipment that can command acceptance like that must be "something" and must have advantages that make its performance superior.

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NORTHWEST
CRAWLER and TRUCK MOUNTED SHOVELS-CRANES-DRAGLINES-PULLSHOVELS

D TOURNAPULL replaces 3 dump trucks and 1 loader

on Ohio housing job

Southern Hills Pit, Inc. of Dayton, Ohio, had 78,000 yards of clay and topsoil to move at the Forsythe Apartments Northwest of Dayton. Work involved cutting streets and parking lots, and using the dirt to fill around 79 new multiple-unit buildings.

To speed production on these scattered, small-yardage assignments, Southern Hills brought in a 7-yd. (9-ton), rubber-tired D Roadster Tournapull. "The Roadster eliminated 3 four-yard dump trucks and 1 loader," reports W. A. Wadsworth, company president. "We even use the unit to finish-grade to within 1 inch . . . which is just as efficiently as we could do it with a grader."

On 1000′ haul . . . 63 pay yds. hourly self-loaded . . . 74 yds. hourly push-loaded

The "D" works alone much of the time, self-loading at scattered cuts for an average of 5½ pay yards in about 45 seconds, over a distance of 65 ft. On a typical 2000′ cycle—with several sharp, restricted turns to make between buildings—the Roadster delivers a load every 4.4 minutes. Based on 50-minute efficiency, that's 11½ trips an hour for the high-speed rig.

Part-time pusher service is provided in tougher going by a 71 h.p. crawler-tractor. Pusher-loaded, the "D" heaps 5½ to 6 pay yards in about 14 seconds and 30 ft. This cuts cycle time from 4.4 min. on similar self-loaded 2000′ round-trip to average of 3.83 min., and increases output from 11½ to 13 loads per 50-min. hour.

On short 675′ haul . . . 96 yds. hourly

Prior to starting this Dayton housing job, the electric-control Roadster graded 24,700 cubic yards at MacArthur School, also in Dayton. Here, on an average haul of 675 ft. one-way, the "D" averaged 96 pay yards hourly from start of job to finish. This production figure includes final-grading of 2:1 slopes . . . precision work which Contractor Wadsworth reports was done quickly and easily by the D Tournapull.

Take a look at the savings possible on your jobs with D Tournapull's 28 m.p.h. speed on big 18.00 x 25 low-pressure tires. Your LeTourneau Distributor will be glad to have you discuss Tournapull performance with owners who have problems similar to yours. Ask him for owner names and addresses.

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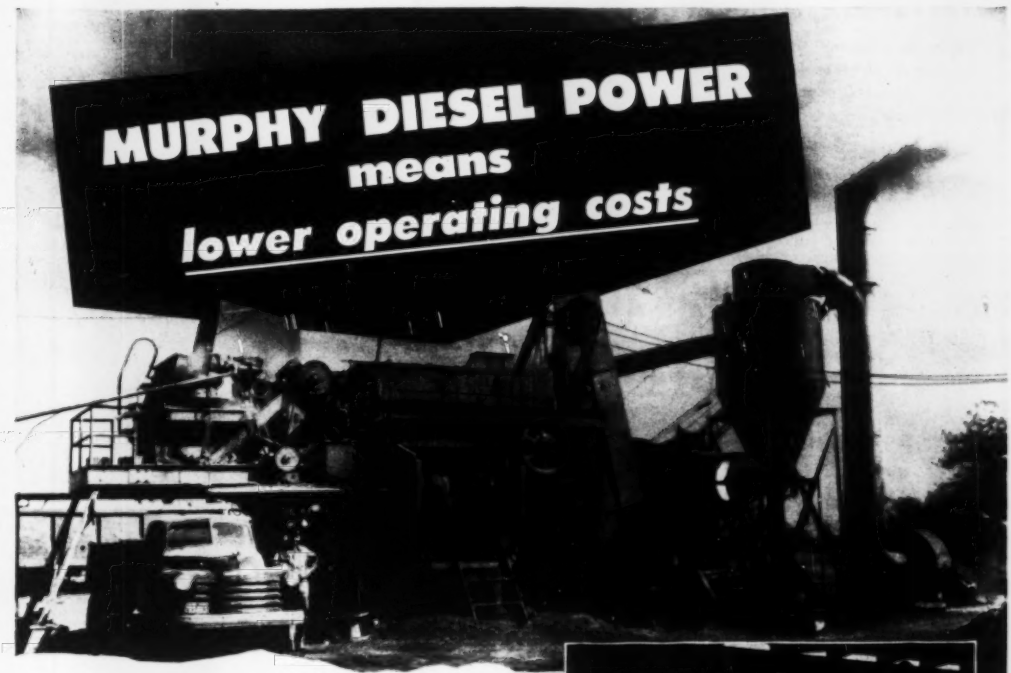
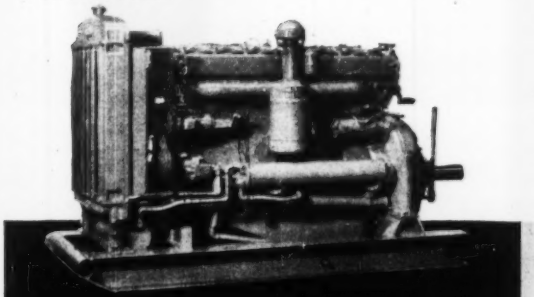


MURPHY DIESEL'S ability to deliver more power . . . greater dependability . . . greater economy . . . and longer engine life means bigger profits for you on any kind of a job. Whether it's a crushing plant, a pump, a shovel, an air compressor, a hoist or a hot mix plant like the one shown above, Murphy Diesel Power will enable you to get the most out of your equipment.

Full details on why Murphy Diesels are able to give you all these operating advantages are given in the booklet "*10 Questions to Ask a Diesel Engine Salesman*". Ask your Murphy Diesel Dealer for a copy or write direct.

Shown above is a Cedarapids hot mix plant owned by Charles G. Gilmore Asphalt Products, Anna, Illinois. Electric power for the plant is supplied by the six cylinder Murphy Diesel Generator Set shown in the inset. When photographed the plant was being used in connection with paving U.S. 61 between Portageville and New Madrid, Missouri.



Heavy Duty Power for construction

Murphy Diesel Engines and Power Units for construction, 90 to 226 H.P., 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.

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Thomas G. Vivadelli, of Nance & Vivadelli Co., says: "The use of Dresser Couplings in the installation of this 42" steel water main for the Washington Suburban Sanitary Commission, was a great help in cutting our installation costs. Not only do they save labor costs, but they also make a tighter line. We would highly recommend the use of Dresser Couplings on any project of this nature."

A DRESSER-COUPLED STEEL LINE delivers water cheaper

Be sure you get the best line at the best price. Put steel pipe and Dresser Couplings in your specifications.

The cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line—the line that cuts *installation* costs, *leakage* losses and *maintenance* costs.

Speed in getting water to a new housing or defense project is usually of great importance. Both to the construction schedule of the project and to your own installation costs. And, with a Dresser-Coupled steel line, you save time two ways. First, the long, strong sections of steel pipe mean fewer joints per mile. Second, those joints are more quickly made with Dresser Couplings because these factory-made joints are easy for any workman to install—even in wet weather.

Leakage losses are cut because with Dressers you get controlled gasket pressure, provided by controlled bolt tightness around the joint. Also because these gaskets harmlessly absorb stresses of vibration, contraction and expansion.

Maintenance costs are reduced by permanent joint tightness. Furthermore, with Dressers there is no heat in joint-making to damage the glass-smooth pipe lining. High carrying capacity is sustained.

From all standpoints, a Dresser-Coupled steel line gives you the ultimate in performance and economy. See your Dresser Sales Engineer or write our Bradford Office for literature.

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See You Through

• There are many good reasons why a Mack is your best truck investment during times like the present. Most important of all is the undisputed fact that Mack trucks outlast them all.

This means that with a Mack truck you can face the uncertainties of the future with assurance...confident that even if trucks should become hard to replace your Mack will see you through...that it will stay on the job delivering dependable service mile after mile and year after year.

Thousands of truck users in World War II found out by actual experience that they were indeed "Lucky to own a Mack." Whatever the future may bring, you'll find that for a sound investment in long-term reliability and operating economy there's no other truck to match a Mack.

Your nearest Mack branch or distributor will give you the full story on what "Built Like A Mack" means in *extra* long life, *extra* strength and stamina, *extra* performance and *extra* dependability.

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...outlast them all

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In punishing contracting service Mack trucks "see you through" with long-lasting dependable operation. This Model LJ six-wheel Diesel Mack serves D'Addario Contracting Co. of Bridgeport, Conn.

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Contractor Louis J. Zimmerman of Hillside, New Jersey knows that it takes man-sized equipment to stand up under the tough production schedule of a big highway construction job. That's why he put his BAY CITY "65" shovel to work at a borrow pit for the New Jersey Turnpike. Like owners and operators everywhere, contractor Zimmerman knows that BAY CITY shovels are engineered from crawlers to boom point for rugged, heavy-duty operation and lasting service. They give you more power plus the extra weight and stability you need to turn out more work every day. Low operating costs mean bigger profits for you. See the many outstanding BAY CITY features at your nearest dealer or write today for complete information.
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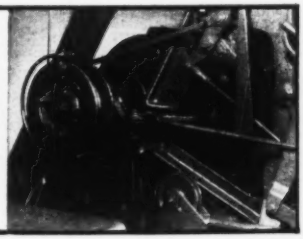
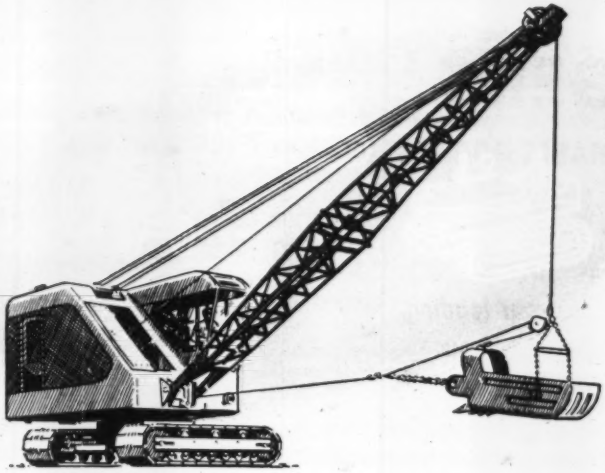
Fast-acting power dipper trip is another exclusive BAY CITY feature available on all shovels. It operates electrically or manually by a control located right where you want it—on top of the swing lever. There's no lost time groping for the trip rope — a time savings, operators report, that accounts for up to 25% more yards daily.



188

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



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When the going's rough and rugged, you need the extra strength and quality of Lamson heavy-duty fasteners.

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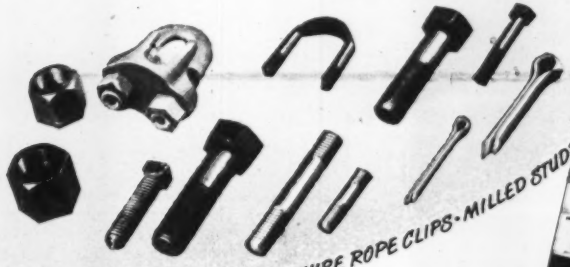

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LAMSON LOCK NUTS: Economical, vibration-proof. Can be re-used repeatedly.

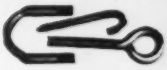
"1035" SET SCREWS: Cup point type, hardened, heat-treated.

COTTER PINS: Steel, Brass, Aluminum and Stainless Steel.

TRACTOR BOLTS: Made to manufacturers' standards.

"1035" CAP SCREWS: Hi-Tensile heat-treated steel.

MILLED STUDS: Concentric, accurate, in a full range of sizes.



"BENT" BOLTS: Including U Bolts, Eye Bolts, Hook Bolts, etc.

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PIPE PLUGS: Forged Steel, heat-treated.

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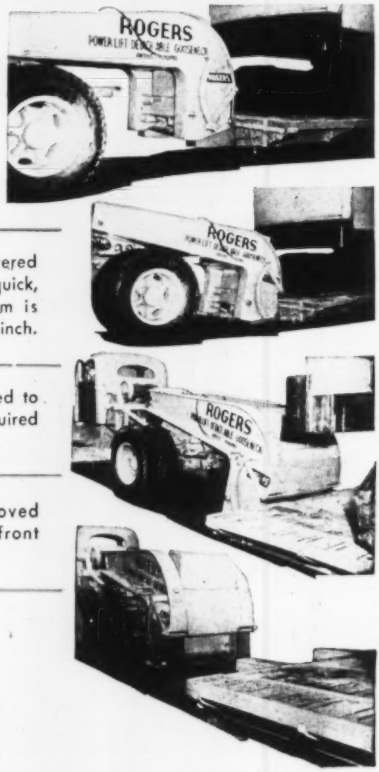
The ROGERS

POWER LIFT DETACHABLE GOOSENECK TRAILER

PATENTS PENDING

1. Carries heavier loads on larger tires.
2. Detaches quickly for fast, easy front loading.
3. Stoops to clear low overhead obstructions.
4. Raises its deck to clear high banked crossings.
5. Is detached, loaded and re-attached in 5 minutes.

IT'S EASY AS A B C



a Loaded trailer with deck in normal position for traveling.

b Front of trailer being lowered by cable operated ram for quick, easy front loading. Ram is powered by the customers winch.

c Front end of trailer lowered to ground. No blocking is required under frame.

d Tractor and gooseneck moved forward for quick, easy front loading.

DEVELOPED BY

The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.

135 Orchard Street

Export Office: 50 Church St. New York 7, N. Y. Cable Address: "Brocltes"

NEWS BRIEFS

• **Welcome to our city**—An out-of-town visitor recently parked his car on a downtown street in Syracuse, N. Y. When he went to get it later, the vehicle was surrounded by hundreds of concrete blocks, piled almost to the roof. Norman Silver of Cambridge, Mass., reported to police that construction workers apparently had piled up the blocks because his car was in their way. When the workmen refused to move the blocks, Mr. Silver hired teen-age boys to do it.

• **Against rain-making**—Five Colorado mining towns—Montezuma, Breckenridge, Dillon, Kokomo and Frisco—have petitioned the state government to have rain-making activities stopped. They declare that cloud-seeding has almost ruined mining in Summit County by causing shafts to collapse.

• **London bridge is falling down**—At least part of it did recently when a 150-ton steel crane being floated up the Thames crashed into the old bridge and caused a section of the stone balustrade to collapse. Traffic was temporarily diverted.

• **Saftey award**—The McWilliams Dredging Co. of New Orleans, has received an engraved plaque award from the American Motorist Insurance Co. because the dredging company has completed more than 500,000 man-hours of work on the Mississippi River Chain of Rock Canal without a single lost-time accident.

• **Beautiful highway**—Massachusetts Public Works Commissioner William F. Callahan has asked officials in communities through which the new Route 128 passes to prevent the erection of billboards and signs along the highway so as to preserve the road's scenic beauty. A new section of Route 128, known as the Northern Circumferential Highway, will be opened soon between Route 9 at the Needham-Wellesley line and Route 1 in Lynnfield.

• **Wood preservative needed**—The $289,000 job of redecking the 1400-ft Navy Pier at Davisville, R. I., was brought to an abrupt halt when the contractor (Gilbane Building Co. of Providence) found that the main 14x14 in. supporting beams were rotting. Rebuilding the pier, the longest in Narragansett Bay, will call for an additional $400,000. A navy spokesman explained that wood-end piling

(*Continued on page 14*)

Raymond

MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER

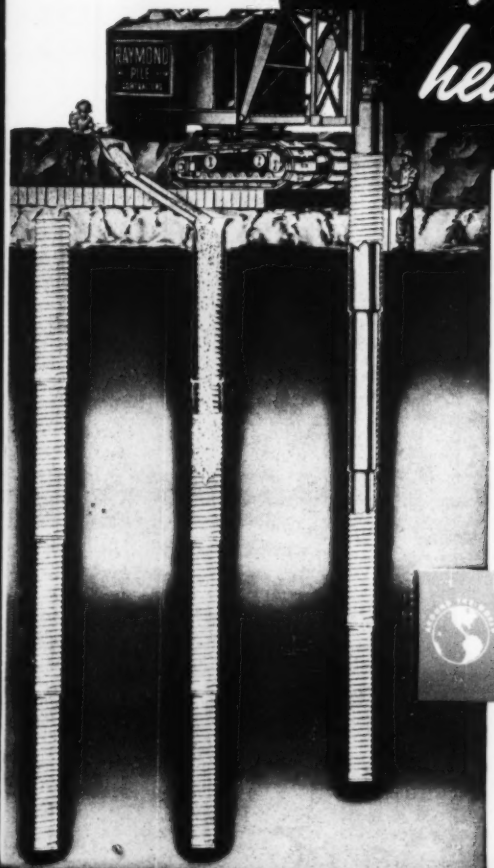
4. COMPOSITE . . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, and cement mortar lining of oil and water pipe lines 4" to 144" in diameter by the Centriline Corporation, a Raymond subsidiary.

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, driving the pile with rigid core.

2. STEP-TAPER PILES

FOR *long lengths* WITH *heavy loads*



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

You are invited to discuss with our engineers the efficiencies and savings made possible by Raymond's exclusive, original concrete pile designs.

RAYMOND PILES MAINTAIN DRIVING RESISTANCE

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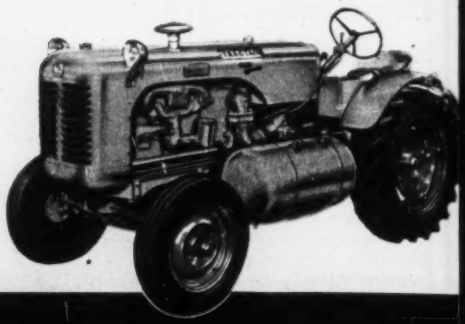
105 Tractair, equipped with backfill blade, air-powering a Le Roi-CLEVELAND 18-lb. Model 31 Clay Digger. You can also use Tractair to run easy-holding Le Roi-CLEVELAND rock drills, hard-hitting pavement breakers, smooth-handling backfill tampers, and the new light wagon drill.

Le Roi gives you more for your MONEY!

more utility
more profits



TRACTAIR

versatility gives you

Digging

Hydraulically-operated Back-Hoe — Bucket sizes 12" to 22". Digging depth 6 to 7 feet. Swing 60° each side of center — a stop is provided for cutting straight trench. A stabilizing bar protects Tractair from twisting and digging strains. This tractor-compressor-back-hoe combination offers tremendous savings on digging jobs too small for power shovels, too big to be done economically with hand labor. Besides cutting trench, this unit also ideal for cemetery grave digging.

Pavement Patching

Le-Roi CLEVELAND Patcher mounts on the rear platform of a Tractair. It drills closely spaced holes within a 7-foot radius, then broaches the section of pavement loose for easy removal. In this job the bricks were removed first to get to the pavement underneath.

Mud Jacking

Trac-Jac consists of a Le Roi-CLEVELAND air-feed sinker drill mounted on Tractair. Feed and drilling controls are within easy reach of the operator. The mobility of this unit makes it ideal for mud-jacking and many other applications.

Wagon Drilling

Tractair Mobildrill — a compressor and wagon drill in a single, self-contained, self-propelled unit. Universal mounting and swinging boom permit drilling at any angle. Drilling is easier and faster, thanks to Le Roi-CLEVELAND air feed.

. . . lets you use economical air power to do more jobs at lower cost

Tractair is a combination tractor and air compressor. Thanks to low center of gravity and good traction, it can go 'most everywhere — doesn't tie up trucks and men for transportation, saves you time and money.

That's why you can put 105 cfm of useful, economical air power to work wherever you need it — use Le Roi-CLEVELAND air tools for breaking pavement, digging, drilling rock, tamping fill, vibrating concrete, driving form pins, and many other tasks.

The money-saving usefulness of Tractair can be multiplied. Just add our front-end loader (with its 8 quickly interchangeable accessories) and you can load, lift, backfill, etc. And Tractair offers you another new attachment, too — a hydraulically controlled back-hoe for digging ditches 12 to 22 inches wide and 6 to 7 feet deep. Air power from Tractair increases the usefulness of the back-hoe by running Le Roi-CLEVELAND breakers whenever it's necessary to break through pavement or frost.

It pays you to investigate Tractair. See your Le Roi distributor — he can show you a unit at work cutting costs with extra hours of usage.

T-18

LE ROI COMPANY

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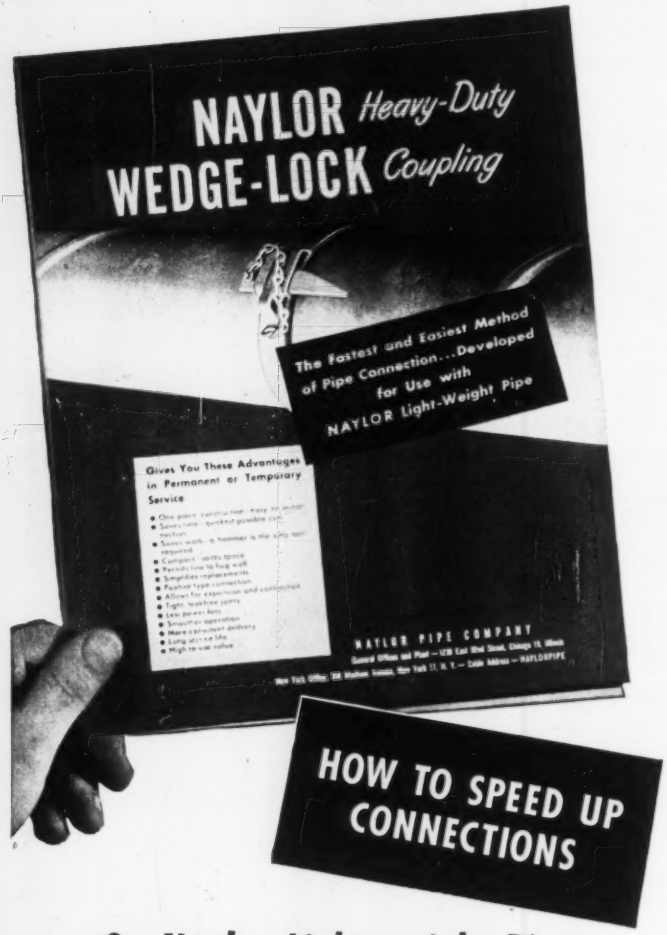
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WEDGE-LOCK Coupling
The Fastest and Easiest Method of Pipe Connection...Developed for Use with NAYLOR Light-Weight Pipe
Gives You These Advantages in Permanent or Temporary Service
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HOW TO SPEED UP CONNECTIONS

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This new bulletin, No. 513, presents complete facts on Naylor's Heavy-Duty Wedge-Lock Coupling—the fastest and easiest method of pipe connection yet devised for light-weight pipe from 8" to 30" in diameter. Write for your copy today, without obligation.

NAYLOR PIPE

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had been creosoted when the pier was built 10 years ago, but in the rush of construction, the heavy beam topping the piles holding the decking was not treated.

• **Foundation method**—Franki Foundation Co. has been formed at 436 Seventh Ave., Pittsburgh 19, Pa., to engage in engineering and installing foundations for industrial and commercial construction and for public works as described in ENR Jan. 4, page 35.

• **Expect big splash**—The Illinois Central Railroad is preparing to drop an old bridge section, 70 ft high 100 ft into the Ohio River. On June 6 the 61-year-old bridge at Cairo was fitted with a new span which was "rolled" into place. The old span will be secured high on the bridge until stripped of its heavier parts and will then be dropped into the river. The first of the old 1,100-ton spans was slipped out and replaced by a 1,760-ton span in just 20 hours in 1950. The 6,500,000 project will be completed by January 1, 1952 (ENR April '50, page 41). The Ohio river runs a full mile in width at Cairo and its average depth is 40 to 60 ft.

• **Cost of snow**—Final figures show that it cost $750,000 to remove snow and ice from the streets of Detroit, Mich., last winter. Carl D. Warner, Department of Public Works commissioner, reports snowfall totaled 42.2 in, slightly less than the winter of '49-'50. Cost that winter was $488,637. Last winter the city bought 32,943 tons of salt for $233,768, and paid $68,499 for equipment. The balance of the cost was labor.

• **Tunnel for storage**—Ralph and Carl Lomen of Seattle, Wash., and Nome, Alaska, figure they have the best place in the world to store records against an atomic attack. They have purchased an abandoned railroad tunnel in the Cascade Mountains east of Seattle and plan to turn it into a huge storage vault, with first occupants welcomed for a fee—after the first of the year. The tunnel, 2.65 mi. long, was used by the Great Northern Railroad until it built a better route. It is capped with 1,400 to 3,000 ft. of gray granite. The Lomen brothers, who operate the Lomen Commercial Co. at Nome, plan to excavate storage chambers at each end of the tunnel. Homes for guards and other personnel will be built on a 70-acre site at the east portal while some type of transportation will be provided within the tunnel. Customers are expected to include industrial firms, banks and public agencies.

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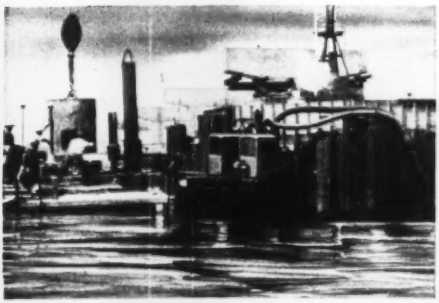
for *every* job!

● GM 4, 6 and Twin 6 "71" engines power aptly named tugs, "Hustler," "Toiler" and "Producer." Standardized parts fit each engine regardless of size.



● 2-cylinder GM "71's" on four 6" Jaeger dewatering pumps save their cost on fuel alone. These compact units are easily moved from pier to pier.

Building 47 piers for a bridge across the Turtle River at Brunswick, Ga., Diamond Construction Co. of Washington, D. C., depends on GM Diesel as the all-round power for boats, pumps, yard crane and concrete mixer.

These versatile Diesel engines do many different jobs well. They are two-cycle—deliver power on every piston downstroke. They accelerate rapidly because, with GM unit injectors, there's no lag in the fuel injection cycle. They deliver a smooth, steady power output—with twice as many power impulses for each turn of the shaft. This added power-per-turn makes them more compact with more horsepower for their size than other type engines. They start instantly on their own safe fuel. And high interchangeability of parts makes them easier and more economical to maintain.

Add up these advantages and you'll see why GM Diesels are offered as standard or optional equipment in over 500 kinds of power machinery by 120 different manufacturers. For the full story, call your GM Diesel distributor or write us.

● 2-yard CMC auxiliary cement mixer is powered by a 3-cylinder GM Diesel engine. Produces 30 yards an hour.

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BUILD WITH Penta-PROTECTED WOOD
PENTA-PROTECTED wood is an excellent building material for many types of construction. It assures you dependable, long-lasting structures that require little maintenance . . . provides superior shock-absorbing and sound-proofing qualities . . . and, in addition costs less than other building materials!
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PENTA protects wood against termites and decay.
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Build wisely, well, and economically . . . with PENTA-PROTECTED wood!
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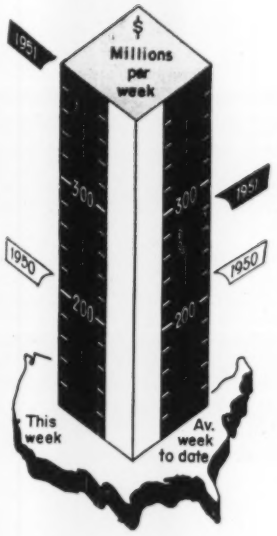
THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumulative 27 wks 1951	1950	% chge
Waterworks	$3.9	$119.3	$121.1	−1
Sewerage	4.7	169.0	139.7	+29
Bridges	12.3	165.5	197.1	−16
Highways	34.3	581.1	652.1	−11
Earthwork, Waterways	4.1	277.5	249.7	+11
Buildings:				
Public	120.0	1,231.6	864.8	+42
Housg., pub.	70.2	400.1	120.7	+231
Housg., priv.	45.7	1,070.6	1,968.1	−46
Commercial	7.1	354.0	473.7	−25
Industrial	23.4	2,398.2	601.2	+299
Unclassified	78.9	920.6	500.2	+84
Total	**$404.6**	**$7,687.5**	**$5,879.5**	**+31**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost	July '51	542.36	260.71	113.70
Bldg. Cost	July '51	400.36	216.42	113.81
Volume	June '51	301	204	145

(Other business News on p. 83)

YOUNG MAN'S WORLD—One out of every three civil engineers is a member of the American Society of Civil Engineers, nearly twice the ratio that existed before 1940, according to Gail A. Hathaway, society president and special assistant to the Army Chief of Engineers. Significantly almost half of the members are juniors, who (since 1947) enjoy full voting rights, but still pay only half full-rate dues. A problem is forming under the pressure of higher society expenses: Will the juniors vote themselves into a higher dues bracket—even dues equality—or will the oldsters up their payments to carry the expense load? It's a nice question of professional responsibility, and more will be heard of it.

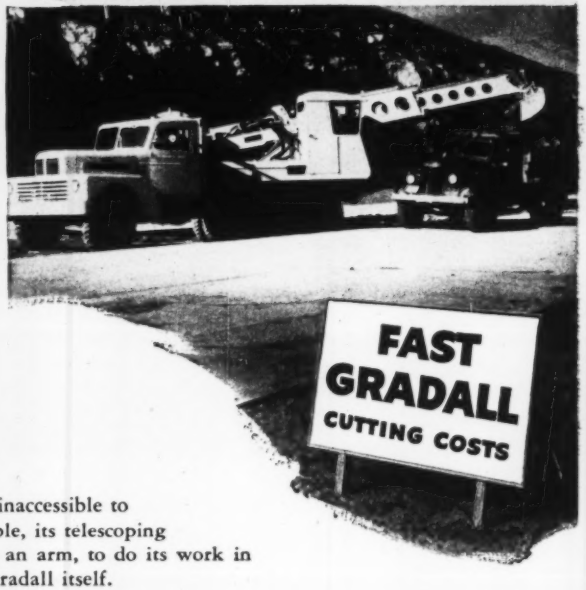
COUNTIES LOSE ON THIS ONE—In 1949, Nebraska's legislature voted a one-cent gas tax increase and raised truck fees to produce more highway money. Last November, state voters nullified the action by voting down a referendum on the law. The 1951 legislature refused to reenact the laws. Now the state has told Nebraska counties that it can no longer furnish engineering personnel to counties and that because of lack of funds the state will take no more county roads under its jurisdiction.

CONTROLS FOR ROADSIDE-BUSINESS ENTRANCES—Maryland expects to boost highway safety under a new law which permits the state roads commission to determine points of location and specify widths of entrance and exit lanes for commercial establishments along highways that carry an average traffic volume of more than 2,000 vehicles per day. No entrance onto such an highway can be constructed from a commercial or industrial property except under state permit.

AMPUTATION SETS IN—The $6.5-billion military construction budget presented to Congress last week by the Defense Department (ENR June 28, p. 23) faces heavy slashes on its trip through the legislative clinic. Deputy Defense Secretary Robert A. Lovett told the House Armed Services Committee that the amount asked is the remainder after trimming down a $12-billion total that actually should be expended for construction. The committee already has agreed informally to cut about $2 billion out of the $6.5 proposal considered a minimum by the Defense Department.

CENTRAL UTAH—MAYBE—The Interior Department has unrolled plans for a $200-million Central Utah reclamation project, to feed 249,000 kw of generator capacity and irrigation ditches in Bonneville and Uintah counties. Government agencies must look it over before Congress sees the 16-year construction plan.

LET'S GET TOGETHER—With an eye to the possibility that voters are becoming debt conscious—and confused—because of the multiplicity of bond issues they have been asked to approve, Seattle's Municipal League had a new proposal: City, county, Port of Seattle and school board should get together. Said the League: Why not form a committee to coordinate plans for future bonding, thus cutting down the number of issues and separate votes to a number that would have a better chance of passage? The case in point: Right now, the port commission has plans for a $10,000,000 bond issue, King County is set to propose a $5,000,000 issue, and other issues are also in the offing.



Are you satisfied with your present hand labor costs? If you're like most construction men, your answer is probably an emphatic "NO"!

Hand labor *is* expensive—because it's *slow*.

But that's *not* the situation when you put a Gradall on the job!

The operator works with large tools, quickly changed for each particular job. He moves large quantities of earth rapidly, with such precision that clean-up hand labor is practically eliminated.

And the Gradall works in "tight" places inaccessible to other machines. Mounted on a 360° turntable, its telescoping boom "reaches out", twists and turns like an arm, to do its work in confining areas not much larger than the Gradall itself. And it's always "ready to go"—ready immediately to be driven to the next job at truck speed.

Cut your construction costs on many jobs, such as trenching, excavating, ditching, backfilling, grading, and pavement removal. Arrange a field demonstration with your Gradall Distributor today.

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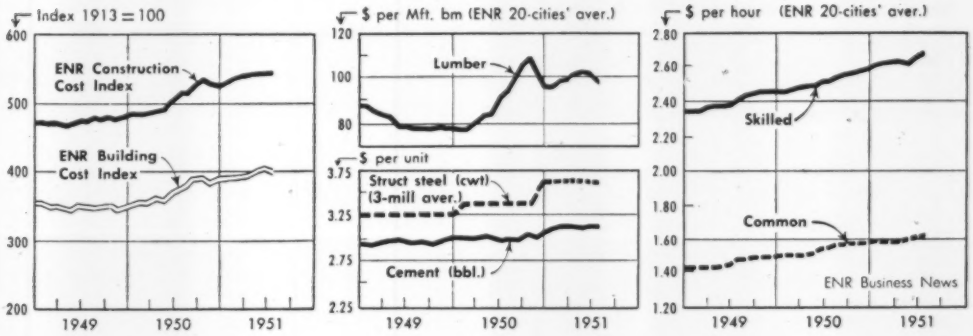
JULY CONSTRUCTION SCOREBOARD



ENR INDEXES (1913 = 100)	July '51	June '51	% Change	July '50	% Change
Construction Cost	542.36	542.68	−0.06	512.67	+ 5.7
Building Cost	400.36	400.75	−0.09	377.66	+ 6.0
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	3.163	3.158	+0.1	2.966	+ 6.6
Structural Steel, (3-mill aver.), per cwt	3.650	3.650	0.0	3.400	+ 7.4
Sand, per ton	2.089	2.085	+0.2	1.970	+ 6.0
Lumber, 2x4 Fir, per M. ft. bm	106.250	109.955	−3.4	102.838	+ 3.8
Lumber, 2x4 Pine, per M. ft. bm	91.233	93.517	−2.4	85.600	+ 6.6
Common brick, per M	31.226	31.102	+0.4	28.525	+ 9.4
Ready-mixed concrete, per c. y	10.925	10.945	−0.2	10.265	+ 6.4
Structural Clay Tile, 3x12x12 per M	147.598	143.964	+2.5	133.900	+10.2
WAGE RATES (20-cities' average)					
Common	1.629	1.615	+0.8	1.538	+ 5.9
Skilled (aver. 3 trades)	2.688	2.648	+1.5	2.524	+ 6.5
Bricklayers	2.956	2.923	+1.1	2.803	+ 5.4
Structural Ironworkers	2.645	2.604	+1.5	2.478	+ 6.7
Carpenters	2.464	2.417	+1.9	2.292	+ 7.5

CONTRACTS AWARDED (thous.)	June 1951 (4-weeks)	June 1950 (5-weeks)	% Change†	Six Months 1951 (26-weeks)	Six Months 1950 (26-weeks)	% Change
Total U. S. (ENR reported)	$1,027,087	$1,253,720	+ 2.4	$7,282,929	$5,665,066	+28.6
Private	443,701	728,064	− 23.8	4,190,238	3,234,378	+29.5
Public	583,386	525,656	+ 38.7	3,092,691	2,430,688	+27.2
Federal	180,864	105,933	+113.4	1,154,100	715,813	+61.2
ENR Constr. Volume Index, '13 = 100	501	526	− 4.8	564	474	+18.9
NEW CONSTRUCTION CAPITAL						
Total	523,965	699,679	−6.4	5,910,611	2,592,269	+128.0
State & Municipal Bond Sales	240,474	322,462	−6.8	1,818,571	1,463,776	+ 24.2
Corporate Security Sales	283,491	377,217	−6.1	1,046,689	1,128,493	− 7.2
Federal (non-federal work)	.....	.....	.....	73,425	.....	.....
Federal (federal work)	.....	.....	.....	2,971,926	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLY	April (A) May (M) 1951	April (A) May (M) 1950	% Change	Four Months (4) Five Months (5) 1951	Four Months (4) Five Months (5) 1950	% Change
Cement, thous. bbls., Bu. of Mines	20,953(A)	18,424(A)	+13.7	62,176(4)	52,549(4)	+18.3
Fabr. Struc. Steel, thous. tons, AISC	233*(M)	195*(M)	+19.5	1,113*(5)	872*(5)	+27.6
Lumber, mil. ft. bm., NLMA	3,454(A)	3,219(A)	+ 7.3	12,985(4)	12,060(4)	+ 7.7
Lumber Prod., mil. ft. bm., NLMA	3,469(A)	3,227(A)	+ 7.5	12,525(4)	11,168(4)	+12.1
Contract Constr. Employ., thous. BLS	2,582(M)	2,245(M)	+15.0	(Av.) 2,364(5)	(Av.) 2,001(5)	+18.1

* Revised, to account for enlarged capacity. † Computed on Weekly Average Basis.

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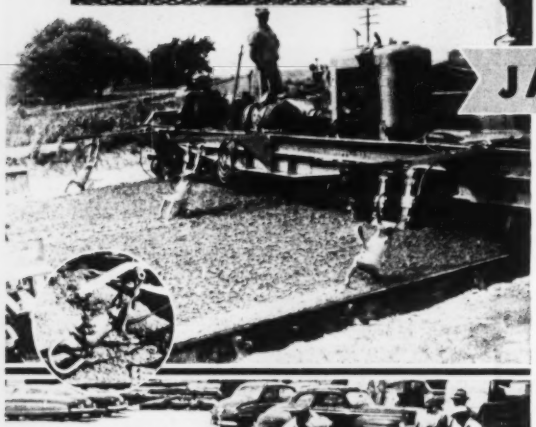
JACKSON VIBRATORY PAVING TUBE

The JACKSON Paving Tube, which is quickly attached to any standard finisher, provides full width internal vibration through full depth of the slab. The harsher mixes are readily made plastic. Important savings in cement can be made, or important gains in compressive strength and durability achieved when no cement reduction is made. Spreading costs are reduced, finishing progress is much more rapid, complete compaction is accomplished and concrete is perfectly puddled at side-forms and joints. It is adaptable to slabs 6" to 24" thick and quickly adjustable from 10' to 25' widths, in the field. May also be attached to standard spreaders for vibrating the first course in thick slab construction. Write for complete details.



JACKSON SIDE FORM VIBRATOR

Eliminates manual vibrating of concrete at side forms. Saves the better part of two men's labor. Mounts on any modern finisher, Jackson Vibratory Paving Tube or Spreader. Employs two or more vibratory units which are simultaneously lowered into or raised from the concrete by the finisher operator. Units operate close to forms or reinforcement, ride over any obstruction without fouling. Will not penetrate into sub-base. Assures thorough compaction regardless of speed of finisher, no spots missed. Long-wearing, trouble-free. Write for complete facts.

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JACKSON VIBRATORY SCREED

Strikes off to any crown, undercuts at curb or side-form, works right up to and around manholes and other obstructions. With it center joints may be eliminated and full widths (up to 30') poured. Requires only two men on widest slab, due to strong tendency to propel itself. It's the only screed that can be rolled back on 4 rollers for second pass. Contractor has only to secure plank cut to proper length and crown to be set for any job. Powered by Jackson 1.25 KVA Portable Power Plant. Most productive, most versatile of all screeds. Write for details.

VIBRATORS for every type of concrete construction FOR SALE or RENT at your Jackson Distributor.

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Finesse in Prestressing

As INVESTIGATORS delve deeper into the technique of prestressed concrete, they discover more and more factors that affect the safety and economy of designs. As with the early researchers in reinforced concrete, new knowledge begets the need for more new knowledge—and sometimes casts doubt on tenets widely accepted as inviolate.

For example, there is the question of how much prestress. A number of years ago, even a small amount of prestress was thought to be valuable. Therefore, ordinary steel was used, with the result that the possible prestress was so small that it was soon lost through plastic flow of the concrete. Then, high-strength steel was introduced, and prestressing went to the other extreme—the higher the better. Now, it is beginning to be recognized that there is an optimum prestress—in other words by varying the amount of prestress the behavior and the safety margin of a prestressed member can be pre-determined.

A British student of the subject, P. W. Abeles, discusses this question (p 32) as it applies to so-called under-reinforced beams in which the prestress is applied through bond. He advances the principle—and shows in detail how it can be applied—that the designer must first decide how he wants his beam to act under a particular loading—at what stage it is to be permitted to crack, what size cracks are permissible and how resilient the beam should be. Then—and only then—can he compute the amount of prestress that would be required to enable the beam to carry its loading safely, with controlled cracking.

The important thing here is the principle, because it is applicable to all types of prestressing. Mr. Abeles prefers bonded prestress (see ENR April 12, p 42) but other experts favor mechanical anchorage of the steel, with prestressing by jacks acting against the beam itself. They claim it is more economical for large members, and that there is less loss of prestress when the concrete shrinks. Bonded prestress also limits the designer to the use of straight steel, denying him the advantages to be gained from installing the steel on a curve corresponding to the varying dead-load moments.

In line with this principle of optimum prestress, there is the possibility of using both tensioned and untensioned high-strength steel simultaneously for reinforcing concrete. For many types of construction, this may be more economical than either prestressed or ordinary reinforced concrete, as will be expounded in a later article by Mr. Abeles.

All these considerations should demonstrate to the prospective user of prestressed concrete that there is a finesse to its technique that must be mastered before it can be used effectively. Clearly, the recommendations of those who have sought to specialize in this new structural science should be given great weight. Beyond this, too, it is well to remember that the technique is not static, that even the experts disagree. Consequently, as in the early days of reinforced concrete, each user is a prospective discoverer of new knowledge. He, too, can contribute to the finesse that will speed the time when prestressed concrete can be used with every assurance of success.

Steel scrap is everybody's business

YOU CAN'T MAKE STEEL without scrap—at least in the quantity and at the speed that is presently required. Nor, at any time, can it be made as cheaply without as with scrap. Moreover, every time a ton of scrap is used in place of a ton of pig iron, four tons of coal, iron ore and limestone are conserved for future use.

These are facts that the NPA wants everyone to know and act upon. They are particularly significant to the construction industry, which is counting on the increase in our steel-making capacity to alleviate its shortages.

The fact is that for every ton of openhearth steel capacity added, an additional ton of scrap must be found. In addition to the scrap that they generate themselves, the steel companies will need to purchase this year 32,500,000 tons of scrap—and next year 35,500,000 tons. Last year, the comparable figure was 29,000,000 tons.

Here is a situation that calls for a radical change in top-level management thinking. No longer can scrap be pushed aside to wait for the junk man to come around. Probably no longer can obsolete equipment be kept in service until it falls apart. Systematic junking and systematic selling of scrap steel is a necessary corollary to high steel production.

For the present emergency, the need is to go after dormant scrap—junked machines and equipment, condemned or abandoned bridges and buildings, railroad rails, worn-out fences, steel forms and frayed cables. It is essential that such items be channeled to scrap dealers at the earliest possible moment.

At the same time, a longer view will reveal the necessity for making organized, continuing salvage a top-management responsibility. If the country is to enjoy the benefits of increased steel production, the steel industry must have the scrap. It won't get it unless enlightened principles of equipment obsolescence and scrap selling are substituted for the long standing idea of letting the junk dealer start the ball rolling.

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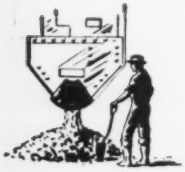

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ENR-D 187

ENGINEERING NEWS-RECORD

JULY 5, 1951 VOL. 147 NO. 1

Builders seek relaxation of controls on credit

Emergency Committee, National Association of Home Builders, believes Regulation X will be altered — Observers note variance with other predictions.

Spurred by what they believed to be a changing Congressional attitude and by fear that their industry would skid downward too fast, homebuilders this week were redoubling their efforts to get relaxation of some of the government's controls on housing credit.

The builders had long claimed that Regulation X (requiring larger downpayments for all home buyers) would work a hardship on middle and lower income class buyers. Last week they thought they had convinced some Congressmen that this claim was correct.

• **Predict change**—Coming out of meeting of the National Association of Home Builders' Emergency Committee, NAHB President W. P. Atkinson predicted relaxation of Regulation X, and reported a change of heart in Congress.

Said Atkinson: Discussions with Congressional leaders clearly show that Congress is disturbed by the restrictive effect of Regulation X; that the home-buying veteran is hardest hit; that Congress will substitute a flat six percent down payment on GI sales for the present large cash payments required.

• **Which experts?**—Depending on which set of experts you want to listen to, NAHB's predictions can be defended or argued down.

Three weeks ago (ENR June 21, p. 82), one set of experts in Washington was willing to bet there would be no relaxation of credit controls for months to come. Their reasons: The Bureau of Labor Statistics had reported 97,000 housing unit starts for May. These starts were well below the same month in 1950—but well above the pace needed if the government's aim of 800,000-850,000 units for 1951 were not to be exceeded. The May figures brought totals for the first five months of 1950 to 444,500 starts—116,900 units below 1950, but still represented a pace that would bring the year to close to 1,000,000 starts, if kept up.

NAHB, however, feels that the May total of starts might be the peak for the year, that increasing strictures on credit and prospects of material shortages might now force housing into a fast skid downward that might end with the industry in a heap very near the bottom of a very small pile of housing starts.

Last week (see p. 84) BLS said that it had surveyed six metropolitan areas, found houses now being built to be generally bigger and more costly than a year ago.

NAHB retorted that it had always provided homes in all price classes, but because of heavy cash downpayments now required "hundreds of thousands" of potential buyers in the lower and middle income groups had been eliminated and builders had been forced to concentrate on more expensive homes.

Last May (ENR May 17, p. 75) money markets throughout the United States began to notice a shortage of mortgage funds, partly because of "unpegging" of government bonds, partly because many large lenders were completing their money placement programs.

NAHB president Atkinson said, however, that he hopes to see the mortgage market loosen up "in the next 60 to 90 days."

• **No shortage**—On one point, at least, both NAHB and other experts agreed: There is no immediate general shortage of housing materials—only spot shortages, and some of those have been caused by government orders.

WASHO will test flexible pavement

Establishment of a test program on flexible pavements in the far west was assured last week by action taken during the 30th annual conference of the Western Association of State Highway Officials.

The group voted to undertake at a very early date a $275,000 test program patterned after the successful Maryland test road (ENR Jan. 18, p. 28), except that the surfaces will be of flexible or bituminous nature. Administration of the program will be in the hands of the Highway Research Board of the National Academy of Sciences.

• **Hurry it up**—Since many of the western states are anxious to have conclusive data to present to 1953 legislative sessions, the hope of the group is to get the test program under way shortly. The WASHO standards committee was directed to arrive at specifications and a test location within 30 days. The aim is to get the test road built this year so that actual testing can include the 1952 spring break-up period.

The group voted to have the test in a central location (probably in Idaho, Wyoming or Utah). Because the construction season is short in these states, swift action is necessary.

It is expected that the test will involve a new road, 7,200 ft long, divided into six 1,200-ft sections, each built to different standards. This new road will be tested to destruction with increasingly heavier truck loads applied over a four- to six-month period. Trucks used will conform to the tractor-trailer type used in the West, as opposed to the shorter single unit used in the Maryland tests.

• **Money sources**—Participating states are California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, Washington and Wyoming. Funds amounting to about $95,000 will be raised by the Highway Research Board through contributions of personnel, equipment, materials or funds from the trucking and petroleum industries, the Bureau of Public Roads and the Department of Defense. The remaining money will come from the states on an equal-participation basis, except where a legislative ceiling has been imposed.

Until the program is rolling, it will be pushed by a special test road committee headed by W. C. Williams, first assistant state highway engineer of Oregon. After that it will be administered by an advisory committee including one member from each participating state and group.

Kaw floods accent need for reservoirs

Flood waters in Kansas and Missouri began easing off early this week under clearing skies. Heavy rains since June 20 over the Kansas (Kaw) River watershed were responsible for the inundation of more than one-half million acres in two states after numerous levees were topped or failed.

In addition, major flood damage has been reported by 34 cities. No fair estimate of the loss caused by the rising waters has been possible up to now. Col. L. J. Lincoln, Kansas City District Army Engineer, said that floods have inundated at least 361,000 acres in Kansas and 357,000 acres in Missouri.

Col. Lincoln stated that dams which have been recommended for construction in Kansas could have held the floods in check. The cited figures aimed at proving that such proposed projects as the Tuttle Creek, Perry and Wilson reservoirs on Kaw tributaries could have cut many feet off the top of damaging flood crests—most of which approached the 50-year record established in 1903.

The Tuttle Creek project on the Big Blue River was authorized in 1938 but has been opposed vigorously by Blue River valley residents—and Congress never has voted construction funds. Tuttle Creek and the recommended Perry Reservoir on the Delaware River would have lopped off from four to eight feet off flood peaks at cities which were hit hard, Col. Lincoln believes.

The Kanoplis Reservoir, an Engineer Corps installation, and the Bureau of Reclamation's Cedar Bluff Reservoir—both on the Smoky Hill River—are brim full, but holding. Had they not been in place, flood crests for several downstream cities would have been almost doubled in height, it is believed.

Water users combine for better results

A bill creating the Kings River Conservation District, embracing a water service area of about 1.2 million acres in Fresno, Tulare and Kings Counties, Calif., has been signed into law by California's Governor Earl Warren.

Its main purpose is to create a single organization to represent the whole Kings River water service area in dealing with the Bureau of Reclamation for water from Pine Flat Dam in the Central Valley area, scheduled to be available to users there in 1954 or 1955.

The bill would combine into one conservation district a total of 31 irrigation districts, mutual water companies, water storage and reclamation districts.

The conservation district would have broad powers to furnish water and electrical energy. It would have the authority to issue general obligation or revenue bonds.

The bill also would give power of eminent domain and would authorize the district to cooperate and contract with the federal government, the state and other public agencies.

The bill will become effective September 23. At that time the governor will be authorized to appoint the first board of directors. This board then will call a special election to submit to the voters of the areas involved the question of whether the district shall be ratified. If not, the district would be dissolved.

Officially, the Bureau of Reclamation has adopted a hands-off policy. But the federal agency likes the idea of bargaining with a single association which would serve to represent the 31 groups.

Air Force, Army to build large NE installations

Massachusetts and New Hampshire will benefit from military construction programs totaling more than $30 million under plans released by the U. S. Air Force and the Army Quartermaster Corps.

The largest project, estimated to cost $20 million, is an electronics research laboratory to go on 100 acres of land adjoining the Major Hanscomb Airport in Bedford, Mass.

Construction is slated to begin in two months on new buildings to accommodate approximately 2000 scientists and technicians who are now engaged in three research projects at Cambridge and Watertown. Construction is expected to be completed late in 1952 or early 1953.

• **Climatic research**—The Quartermaster Corps will begin construction on a new $11-million climatic research laboratory on Lake Cochituate, Natick, Mass., as soon as an appropriation is made for the structure. Congressional approval has been given to the 20-acre site.

The big laboratory will employ 1000 persons, 700 of whom will be scientists. Several one-story buildings are to be erected for testing war materials (weapons excluded) under simulated jungle heat, arctic cold and other possible weather conditions encountered around the globe.

Historic Newington, N. H., incorporated in 1764, has been told by defense officials that it is to be wiped off the map—to make room for extension of the Portsmouth Air Base.

AEC sets up new board to oversee construction

The Atomic Energy Commission has established a Division of Construction and Supply, to be responsible for staff supervision of all AEC construction and related engineering activities. The division will also administer priorities, allocations and the Controlled Materials Plan for AEC, and handle production facilities and licensing and export control programs.

Components will be a construction engineering branch, a defense requirements branch, export control branch, supply branch, and a special assistance branch.

Set limits for Ohio River bacteria

Bacterial quality objectives for the Ohio—adopted in April by the Ohio River Valley Water Sanitation Commission—have just been published.

The yardstick which will measure existing sanitary conditions and determine the scale of treatment required puts limits on number of coliform organisms acceptable in water used for domestic supply and for recreation.

• **At water supply intakes**—Limit is 5,000 per 100 ml (monthly arithmetical average "most probable number") in any month. This number must not be exceeded in more than 20% of the samples studied in any month; nor should the number exceed 20,000 per 100 ml in more than 5% of such samples.

• **At bathing beaches**—Limit is 1,000 coliform organisms per 100 ml during any month of the swimming season. The monthly arithmetical average NPN must not top this limit in more than 20% of the samples studied nor exceed 2,400 per 100 ml on any day.

In non-bathing waters 5,000 per 100 ml is the limit for any given month—not to be exceeded in more than 20% of the samples that month.

Recreational water recommendations are called tentative, pending further study of bathing-water sanitation.

The report emphasizes the importance of judgment and common sense in application of its suggested objectives. Recommendations are called "compromise between that which would be desirable and that which is administratively practicable."

Harold W. Streeter, consultant to the commission reported the findings.

Educators cite goal for mappers, form surveying education division

American Congress on Surveying and Mapping gets suggestions on raising the status of the profession—Claim map needs ignored

Formation of a surveying education division was a highlight of the American Congress on Surveying and Mapping 11th annual meeting in Washington recently.

Headed by Prof. R. C. Brinker, of Virginia Polytechnic Institute, the new division has several tentative objectives. These were outlined by Prof. Paul Rice of Lafayette College, in a talk that also cited the educational origins of the congress.

Prof. Rice suggested that the new division should:

1. Raise the status of surveying professionally. First of all, perhaps coin a name more glamorous than "Surveyor".

2. Examine the practice of teaching elementary surveying to all engineers.

3. Recommend textbook changes that would convince non-surveyors that an elementary course does not qualify him to practice.

4. Recommend means for overcoming the shortage of men who are trained adequately to handle ever-growing mapping programs, perhaps by creating a separate surveying curriculum.

5. Seek means of cooperating with state societies of professional engineers, to the end that all of those societies admit the professional status of surveyors.

6. Cooperate with teachers of drawing to resist the deletion of drawing courses from curricula, and to get more mapping into the subject matter of drawing courses.

7. Cooperate with the Congress' Property Surveys Division in the production of a pioneer text on property surveys.

• **Educators sparked congress**—In his introduction, Professor Rice reviewed the congress' founding, which stemmed from Committee 8 (surveying teachers) of the American Society for Engineering Education division of civil engineering. Prof. Rice, who was the organizer of Committee 8, mentioned a series of committee conferences, begun in 1937 under the leadership of the late John S. Dodds, of Iowa State College (and subsequently a president of the congress).

These conferences were attended by another member of the original group, George Harding of Ohio State University.

Fittingly, in concurrence with the creation of the Congress Education Division, Prof. Harding last week was elected president for 1952. He succeeds Gerald Fitzgerald, of the U. S. Geological Survey.

• **Separate curriculum?** — Surveying education also was the subject of a challenging talk by S. A. Bauer, of Cleveland. Entitled "The education of the land surveyor, if and when," Mr. Bauer's remarks contended that to date there is no formal education for a land surveyor. Such education should include, in addition to surveying techniques, thorough foundation in law of boundaries, competence with the mathematical law of probabilities, and broader rehearsal in mapping and drafting.

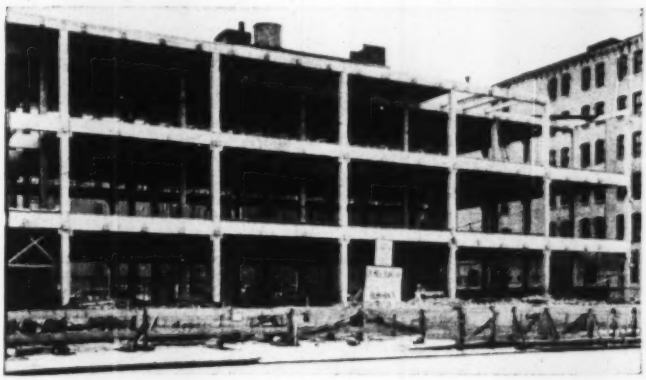
It also should include graphic reproduction. Some emphasis also should be placed on astronomy and photogrammetry. The latter suggestion is not intended to place the land surveyor in competition with the photogrammetrist, but rather to give him a tool for more effective work in his own field.

• **For interstate highways**—New approaches to the public need for maps were suggested in a few sessions. A discussion panel headed by J. C. Carpenter, of the Bureau of Public Roads related the needs for mapping to the national system of interstate highways.

James A. Patterson, of the Pennsylvania State Planning Board, urged broader map usefulness. Noting the much advertised fact that the country is only half mapped for topography, and that but half of this is adequate, he said that much of the "adequate" mapping is adequate merely for certain groups.

• **Map needs ignored**—For instance, one-third of today's mapping is in the Missouri River basin, where one-twentieth of the population lives.

Moreover the purpose of much topographic mapping is to aid federal projects and the development of mineral resources, "but somewhere along the line the needs of the engineer, the planner, the technician and a host of other map users have been side-tracked," Mr. Patterson said.



PRECAST OFFICE STRUCTURE—Framing of this three-story masonry office building is of precast, reinforced concrete structural members. When completed, the structure will house new engineering offices for the Chemical Plants Division of Blaw-Knox Construction Co. in Pittsburgh. Precast concrete structural members are supplied by the Cementstone Corp. (See ENR Feb. 17, 1949, p. 62, for similar design).

Engineer shortage 60,000, according to new survey

A telegraphic check of the needs of 378 companies and government agencies, made by the Manpower Commission of Engineers Joint Council, reveals that industry still needs about 60,000 engineers.

This large deficit in trained manpower is indicated in spite of the addition of 38,000 recent engineer graduates. About one-half of the 1951 graduates are being siphoned off for the military through ROTC, the reserve program and the needs of Selective Service.

The needs of military and atomic energy groups were not surveyed. Except for a few large engineering organizations such as Stone & Webster, few firms employing a considerable number of civil engineers were included in this check. There is reason to believe that the increased use of engineers in recent years may be a long-term trend.

Heavy snows spur attack on rainmakers

Anti-rainmaking protests from mountainous Summit County in central Colorado—where unusually heavy snows have fallen last month—have spurred Governor Dan Thornton to investigate cloud-seeding activities. He recently asked the state's rainmaking regulatory commission to investigate charges that mining, lumbering, tourist and ranching interests are being hurt by the results of cloud-seeding.

One mine owner says the operations at his three mines are two weeks behind schedule because of deep snow. He estimates his loss at $15,000. Another mine owner spent $6,000 to unwater his mine and a third reportedly spent $30,000 for new equipment to battle snowdrifts in the area. In addition to hampering local industries and ranches, the tourists season has been delayed seriously, according to complaints.

The specific target of the protestors is the Water Resources Development Corp., Denver. Weather Bureau records show that the Summit County community of Breckenbridge had 200 in of snow between Nov. 1, 1950 and June 1, 1951. The similar period a year ago showed 145 in; two years ago: 126 in.

• **Precipitation insurance**—Reports persist throughout the West to the effect that Water Resources Development Corp. has a number of cloud-seeding contracts with municipalities who carry insurance policies, underwritten by Lloyd's of London, to protect themselves against damage suits brought by residents with real or fancied claims. However, the cloud-seeders are close-mouthed. They feel that general distribution of information on insurance coverage may lead to certain types of nuisance suits filed against them.

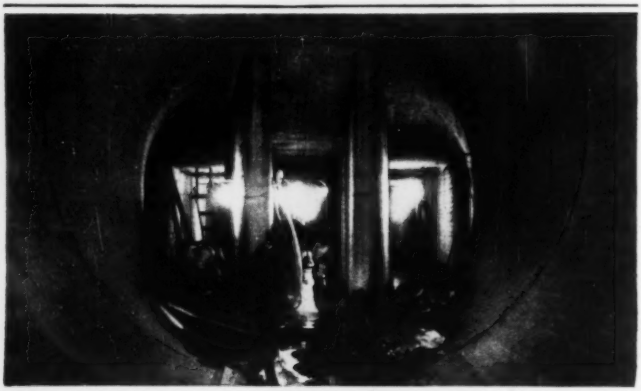
A spokesman for the cloud-seeding company says that insurance to protect a city under a rainmaking contract usually carries a $5,000 deductible clause. "It's just as when you buy automobile insurance," he explained, "you expect a deductible clause to reduce the premiums."

Insurance rates are predicated upon the population density and property value of the area over which cloud-seeding is to be carried out. Deductible clauses reduce the premiums for one season of rainmaking from 10% of the contract (for $500 deductible) to about 5% (for $5,000 deductible).

In the usual procedure, the Lloyd's policy is not included in the contract. It is up to the municipality or other group engaged the rainmakers to take out a policy.

• **Interior asks $25 million**—The Department of the Interior plans to undertake a $25-million research program on how man can control rainfall. The program, as outlined by Reclamation Bureau Commissioner Michael Strauss, would investigate methods of preventing precipitation—as well as expand current experiments on rainmaking.

The multi-million dollar appropriation sought also would provide for research in the purifying of sea water. Strauss says that the present "dabbling" in rain-making by numerous individuals and organizations is not providing enough information on methods.



INSIDE THE TUNNEL—Lining of the diversion tunnel of the $19-million Isabella Dam on the Kern River in California's Central Valley has been completed and work started on the control tower shaft. The H. C. Smith Co., Los Angeles, under a $509,000 contract, schedules this work for completion in July. The Corps of Engineers Isabella project, east of Bakersfield, will provide 550,000 acre-feet of water storage and is scheduled for completion in 1954.

Sewage shows up worse as Pa. clears away coal silt

Need for treating sewage to the degree required by Pennsylvania's Sanitary Water Board is emphasized in a report covering Schuylkill River surveys by the State Health Department's bureau of sanitary engineering. Surveys extend back a few years, showing conditions before the cleanup of silt in the river and conditions now.

Results offer proof that polluting action of sewage is not destroyed—only arrested—by acid mine water. As acid in a stream is neutralized by neutral forces, sewage will revive and again become a polluting agent.

Sewage pollution in Pennsylvania streams also has been masked formerly to a degree by silt from coal breakers. Now that all the collieries along the Schuylkill and its tributaries have desilting systems, built by orders of the Sanitary Water Board, pollution by silt and fine sizes of coal has been virtually eliminated (ENR Mar. 22, p 34).

(On May 31 the dredging out of desilting basins on the Schuylkill was completed. From now on the removal of coal culm will be a relatively simple maintenance operation.)

Sewage pollution has been made more conspicuous. And combined with industrial wastes discharged to municipal sewerage system, they cause pollution beyond that permitted.

• **Fuller treatment needed**—Cities from Reading to Philadelphia have had primary sewage treatment plants for years. Now, since the cleanup of pollution from the coal breakers, the Sanitary Water Board has ordered all municipalities to increase the degree of treatment.

The result: Additions are being made to the sewage treatment works at Reading, Norristown, Phoenixville and Royersford and a new sewage treatment works is being built by the Wyomissing Valley Authority.

Philadelphia is building the Southwest sewage treatment plant on the Schuylkill, largest of its three new plants (ENR Mar 29, p 289).

Charles M. Coff dies, USBR section chief

Charles M. Coff, 57, head of the schedules and progress section of the Construction Division of the U. S. Bureau of Reclamation, died in Denver, Colo., June 25.

Born in Russia, Mr. Coff took an engineering degree at Valparaiso University, Indiana. Formerly he was state bridge engineer for Nebraska. In the second World War he was with the Corps of Engineers.

Virginia seeks approval of Hampton Roads tunnel

Approval of a combined viaduct causeway-tunnel project across Hampton Roads to provide direct highway connections between Norfolk and Newport News, Va., is being sought by the Virginia Highway Department.

An application for a permit is to be made at once to the Army Engineers as a result of a "very encouraging" report to the department by Howard Needles, Tammen & Bergendoff, consulting engineers of New York and Kansas City. Sungstad and Baillie of New York collaborated.

Approximate route for the proposed crossing is shown on the accompanying map. It would consist of a viaduct over the Naval Operating Base in Norfolk; a causeway out to an artificial island near the main channel; 7,200 ft of vehicle tunnel from this island to a similar one across the channel; and a causeway and low bridge to the highway connecting Newport News and Old Point Comfort—a total length of 21,759 ft.

If approval of the location is received, the department expects to let contracts for borings to determine foundation conditions and engage consultants to make a traffic study to demonstrate whether the project now estimated to cost $42 million, could be financed under the Virginia Revenue Bond Act. A rough estimate of earnings has been made by the consultants, and it indicates that the cost could be amortized in about 25 years.

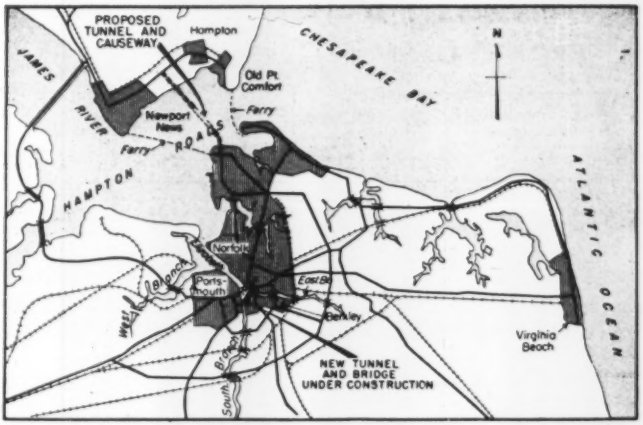
Conference to discuss nuclear energy buildings

The American Institute of Architects is planning a conference in October to discuss building problems connected with the utilization of nuclear energy in laboratories and hospitals.

Better building construction for peacetime uses of nuclear energy, will occupy the program entirely. Sponsorship is by the Building Research Advisory Board of the National Research Council.

Subjects expected to be on the agenda include: shielding space from radiation; waste disposal; air supply and ventilation for hoods; building materials and finishes not easily contaminated; and architectural designs for tracer laboratories.

Meetings will be held at the National Research Council. Those interested in attending should contact William H. Scheick, Executive Director, Building Research Advisory Board, 2101 Constitution Ave., Washington, D. C.



A CAUSEWAY AND TUNNEL across the four miles of water between Norfolk and Newport News is planned to relieve the congestion on existing ferry routes. A tunnel and bridge between Norfolk and Portsmouth is under construction (ENR Nov. 16, 1950, p 44)

Bridge building shows high activity

Bridges for the nation's highways continue to absorb a large share of the funds allotted to highway construction. Generally, the most expensive single units under consideration are those built to carry traffic over city streets and real estate as part of expressways to expedite and bypass through traffic.

The budget of California's division of highways for the next fiscal year calls for the construction of 67 bridge projects estimated to cost $33.6 million.

Construction of Cleveland's $54-million Inner Belt Freeway, which is to circle the city's downtown business district, is expected to begin late this year when contracts will be let on the freeway's most important section, the $30-million Inner Belt Bridge and its approaches. The decision was made after the Ohio State Highway Department approved a plan for a two-truss, cantilever, eight-lane bridge for the inner belt.

• **For the South** – The Mississippi State Highway Commission last week awarded a $6-million contract to Merrit-Chapman & Scott Corp. for construction of a four-lane bridge across Bay St. Louis, on the Gulf of Mexico.

The trestle-type bridge, 10,198 ft long and 63 ft wide overall, will span the bay to carry U. S. Highway 90 between the towns of Bay St. Louis on the west and Henderson Point on the east.

A 124-ft bascule span over the channel will provide a horizontal clearance of 100 ft. The trestle will have 239 reinforced concrete girder spans, each 41 ft long, and two steel approach spans will flank the bascule draw.

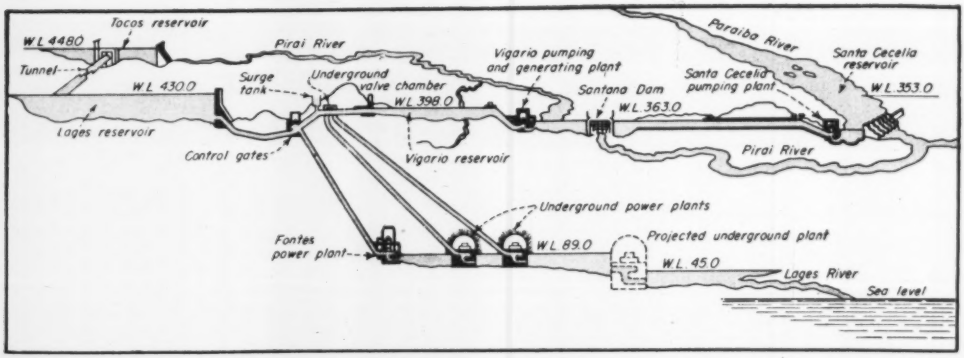
Deck of the new bridge will be of reinforced concrete, supported by reinforced concrete piles. There will be two double tarffic lanes, each 26 ft. wide. They will be separated by a three-foot divider strip and there will be a walkawy three ft wide on each side of the structure.

• **Canso controversy**—Eastern Canada is debating the technical aspects of the long-proposed bridge over the Strait of Canso, joining the mainland of Nova Scotia with Cape Breton Island (ENR Apr. 7, 1949, p. 17).

Recently, Donald Gordon, president of Canadian National Railways, whose trains will cross the structure when completed, stated that present plans for a low-level bridge are not acceptable to CNR engineers and for that reason the railroad would not consider the plan.

• **Delaware toll**—Toll rates across the Delaware River Memorial Bridge are expected to be 75 cents for passenger cars and 50 cents per axle for trucks.

Revenues for 1952—the first full year of operation—are expected to reach $4.7 million. Vehicle flow is estimated at about 5 million for that period. Revisions have been made both in the flow of vehicles and receipts expected since plans were first developed in 1948. It is pointed out that operating costs and highway usage have risen and more money will be required to meet added expenses. Recent toll increases on the nearby New Castle-Pennsville Ferry have not affected traffic adversely, it is said.



WATER FROM THE PARAIBA RIVER, shown at the right, is to be diverted into the valley of the Pirai and from there into a reservoir on a tributary of the latter stream, whence it will be drawn for power generation in the valley of the Lages River.

Triple water diversion for Brazil power

McGraw-Hill World News
Rio de Janeiro, Brazil

A LARGE river diversion project is under way in the mountains above Rio de Janeiro, Brazil, to raise the potential of the city's hydro-electric power sources to 820,000 kw.

It is an amplification of a scheme originally projected by the late A. W. K. Billings when he was president of the Rio de Janeiro Tramways, Light & Power Co., and is part of an expansion program made possible by loans from the World Bank totaling $90 million. The first stage of construction should be completed by the end of this year and work is under way on the second stage.

Basically, the scheme consists of damming one river and pumping water from it into a reservoir formed by damming a second valley, from which the stored water from the two streams is to be pumped to a still higher level in a third valley. From this point it is to be drawn for power generation in a fourth valley where the system's original generating station is located. Here the additional water will be used, initially, to increase the output of that original plant, pending completion of two large underground power stations.

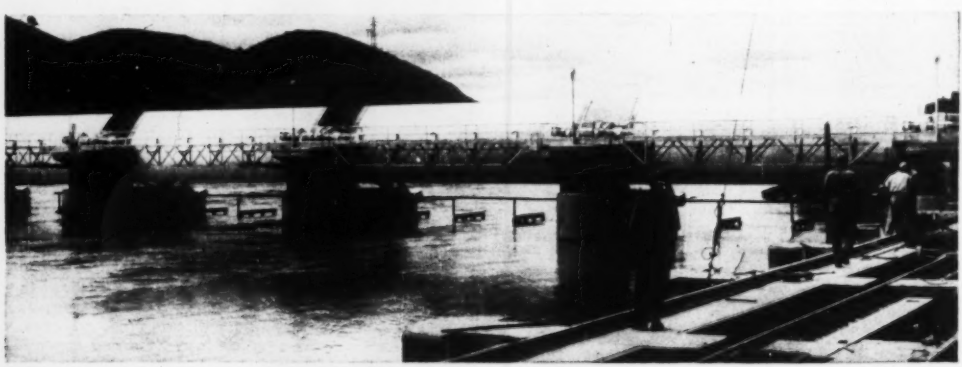
One of the pumping installations now being built is designed so that the flow can be reversed to permit using the plant as a pumped-storage power generating station at times of peak load on the system.

• **History**—The city's original generating station is at Fontes on the Ribeirao das Lages, about 70 km from the city in the coastal range. Put into service in 1908, this project consisted of a concrete dam 34 m. high and 234 m. long forming a reservoir of 180 million cubic meters usable capacity (146,000 acre-ft). Six generator units with a combined capacity of 24,000 kw were installed initially in the power station.

Five years later the available water to the Fontes plant was increased by damming the Rio Pirai, at Tocos, and diverting its flow through an 8.5-km tunnel to the reservoir back of the Fontes dam. This made possible the addition of two 10,000 kw generators.

Between 1920 and 1923 a second generating station, with an installed capacity of 162,000 kw was built on the nearby Rio Paraiba. This plant is operated during the flood season to carry part of the base load of the system and to permit water to be accumulated behind the Fontes plant.

At the start of World War II the



LARGE TAINTER GATES make up the principal parts of a dam to be used to form a reservoir on the Paraiba River from which water is to be pumped over into the Pirai River valley. The river was in flood when this picture was taken.

capacity of this latter reservoir was increased to 1,051 million cubic meters (852,800 acre-ft) by raising the crest of the dam 28 meters (ENR Aug. 4, 1949, p. 36). At the same time the old penstocks were replaced by two tunnels, 6.16 m. in diameter, which are served by a passage cut through the dam without drawing down the reservoir (ENR Sept. 29, 1949, p. 38).

This increase in reservoir capacity made possible the installation of three 42,000-kw generators in an addition to the Fontes station, bringing its total installed capacity to 170,000 kw.

• **More power needed**—But even this expansion did not keep up with the area's power requirement, so planning for the multi-valley diversion project that now is under construction was started in 1946.

Starting point of the present construction program is at Santa Cecilia on the Rio Paraiba, about 25 km by road from the Fonte plant. Here the Santa Cecilia Dam is scheduled for completion by the end of 1951. When completed it will consist of an earth dike 100 m long and concrete weir 175.5 m long surmounted by eight Tainter gates 18.3 m long and 6 m high, providing an opening 6-m high.

These gates are being fabricated in sections at the Dravo Corp. plant at Pittsburgh and shipped to the dam where they are to be assembled by welding.

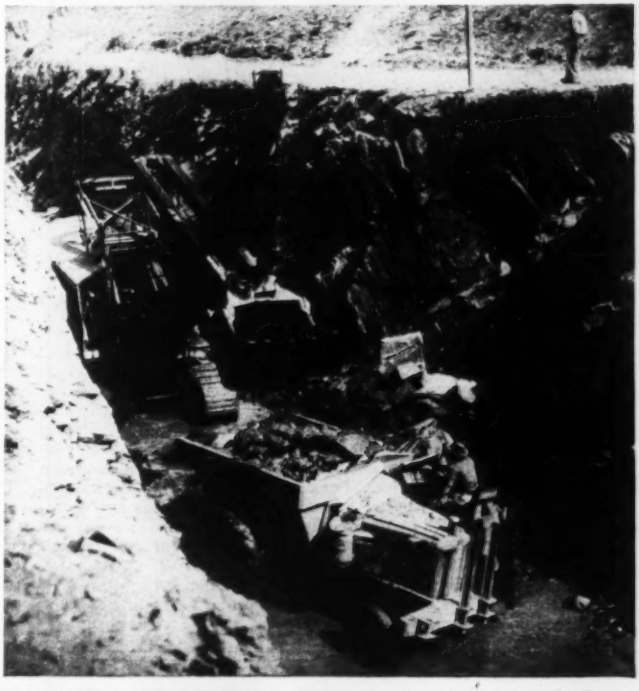
Four of the gates were installed early in 1951, prior to the rainy season; the second four gates and the earth dike will be completed after the rains cease about mid-year.

• **Pumping plants**—Adjoining the weir on the south bank is the pumping station, of concrete and steel construction, containing four pumps of 10,000-hp capacity and an output of 40 cubic meters per second. Each discharges into a 4-m-dia concrete-lined pressure tunnel rising to a collecting station at the inlet to a flow-line tunnel 3,311 m long and having a cross-sectional area of 40 sq m. This tunnel in turn discharges into a canal, 2,500 m long, that delivers the water diverted from the Rio Paraiba to a reservoir formed by a dam across the Rio Pirai above Santanesia, known as the Santana reservoir.

The actual lift required to make this diversion, under normal river conditions, is only 13.5 m, but the pumps are designed to operate under a 15-m head. Total loss of head in the tunnel and canal system is 3.5 m.

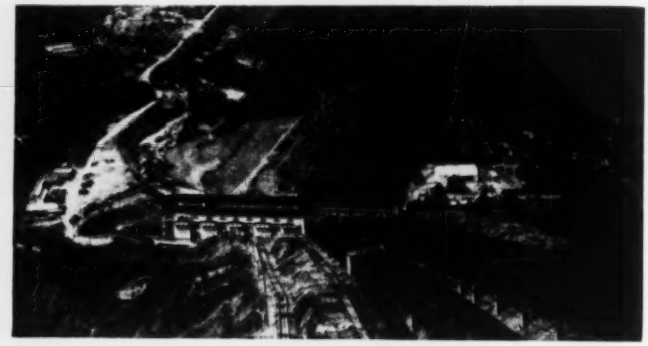
The dam forming the Santana reservoir is similar to the Santa Cecilia weir but it is much shorter and requires only two crest gates to handle

THIS TUNNEL will carry water from the Paraiba valley for part of its route over into the Pirai River valley. It has a cross-section of 40 sq m and was driven full-face. The sign says "Proceed with caution."



EXCAVATING THE CANAL that will carry the diverted water into the Santana reservoir. Through rock, it will be lined with concrete.

A SMALL DAM was all that was needed to form the Santana reservoir in the Pirai River valley, from which water is pumped to the highest storage reservoir.



LOOKING DOWN ON THE FONTES POWER PLANT, which is served by the penstocks at the right. Two new underground generating plants are to be built in the hills at the left, with tailrace tunnels discharging into the stream shown here.

flood flows. It forms a shallow lake extending upstream about 20 km to the site of the pumping station that will deliver the water to a third and much larger reservoir located high up on a small tributary of the Rio Pirai.

This is the pumping plant that is to serve also as a generating unit. Known as the Vigario station, it is to have five pumps, each driven by 22,500-hp motors, designed to deliver 40 cms to the Vigario reservoir. For about two hours each day the flow through these pumps will be reversed, converting them into turbo generators, to supply peak-load power to Rio.

The lift required to make this second diversion is 35 m under average conditions. Five steel penstocks, each 4-m in diameter, carry the water up to the Vigario reservoir, which has a useful storage capacity of 1.5 million cu m (1,200 acre-ft). Its normal surface elevation is 398 m above sea level and 45 m above the initial diversion point back of the dam at Santa Cecilia.

Vigario reservoir is being created by construction of two large earth dikes, 51 m and 45 m high, and having a total length of 430 m. Both presented unusual foundation problems as they had to be built across swamps.

• **Long canal**—From this reservoir a canal 1,360 m long will carry the water to a 690-m long tunnel controlled by gates, which will deliver water to an underground valve chamber that is to serve the present and future power stations.

This tunnel is large, having a cross-section of 57 sq m inside its concrete lining. At the valve chamber it fans out into three steel-lined branches.

In Phase I of the development two branches will be closed off by bulkheads or valves. Later they will serve two pressure shafts supplying two underground generating stations. The third, after passing through the base of a surge shaft, will be cut into one of the tunnels now supplying water to the Fontes station. It will be used to supply additional water to that station when the level of Lages reservoir is below that of the Vigario reservoir, which will be much of the time.

Work on this first phase of the scheme is well along toward completion.

Phase II will consist of driving two inclined shafts about 500 m long from the valve chamber down to two new underground power stations at the same level as the Fontes station. Tailwater at these proposed subterranean stations will be only 89 m above sea level, thus making possible the development of a gross head of 309 m in each underground station.

Phase III will not be started until after these stations are completed. It will consist of installing a pump unit in the control chamber now being built which will take any water not needed by the two power stations and pump it up into the Lages reservoir serving the old Fontes plant, thus adding to the firm capacity of that plant.

Still farther in the future is a plan to build another large generating station, downstream from the Fontes plant and the new underground plants, to use the combined flow from these plants at a site where a head of 41 m can be developed.

• **Direction of the work**—The present phase of this development program is under the direction of two teams of engineers. Overall direction is handled by A. J. Ackerman, vice president and director of hydro-electric development for Cobast—the management company that represents the utility company. F. T. Matthias is chief construction manager and Harry Riley is Rio manager for Cobast. For the contracts, Morrison-Knudsen do Brasil, M. G. Kennedy is president, John Reed is area manager and George Barlow project manager. Both organizations assisted in the preparation of this report.

American construction equipment is being used extensively in construction of the first phase and the Canadian branches of the Allis-Chalmers Manufacturing Co. and the General Electric Co. are supplying the pumps and motors for the pumping stations.

For the second phase, the pressure shafts leading to the two underground generating stations are to be driven by the Swedish firm Sentab and the shaft lining is to be fabricated by the S. Morgan Smith Co. of Milwaukee. Lining of the tunnels is to be done by Morrison-Knudsen.

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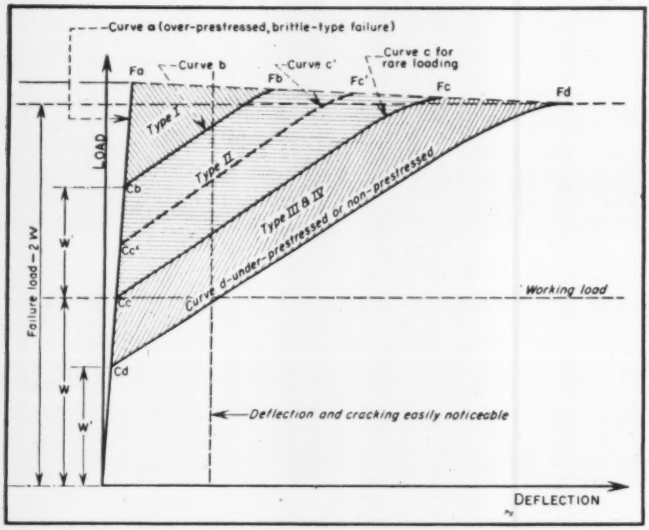

FIG. 1. LOAD-DEFLECTION CURVES for concrete beams of identical section with different prestress, but designed for the same working load.

Here's an answer to . . .

How much prestress?

P. W. Abeles
Consulting Engineer
London, England

TESTS SHOW that varying the amount of prestress in prestressed concrete beams changes their behavior under loads and type of failure. If the prestress is very large, cracking and failure may occur simultaneously, as with a brittle material. For lesser amounts of prestress, deflections and cracks may become quite large before failure occurs. Hence, the answer to the question, "How much prestress?" must take more into account than just control of cracks in the range of working loads.

In an article, "Prestressed beams with bond" (ENR April 12, p. 42), I described various methods of applying prestress to concrete beams and discussed the concept of safety factor for over- and under-reinforced beams. (An under-reinforced beam is one in which failure is primarily caused by the steel after considerable deflection occurs. Failure of over-reinforced beams is due to limited compressive resistance of the concrete; this type of construction should be avoided because failure occurs at a stage when the deflection and state of cracking do not give any warning of danger). The following analysis is limited to under-reinforced beams with prestress applied by steel wires bonded to the concrete. Nor does it apply when rods of relatively large diameter are used.

If these beams are safe against bond and shear failures, calculated steel stress at failure will always reach and often exceed the steel strength, provided the initial tensioning stress in the steel is not too low. This has been found in many tests and confirmed by a series of comparative tests carried out at the Brixton School of Building, London, in 1949 and 1950.

• **Four types of beam**—Prestressed beams with bonded wires may be classified in accordance with the relative magnitude of prestress. Four types of beams may be distinguished:

Type I—a fully prestressed member. Only compressive stresses occur under working load, W. A load-deflection curve plotted for this beam would fall between curves a and b (Fig. 1).

Curve a, the upper limit for Type I, represents an over-prestressed beam, one for which cracking and failure take place simultaneously.

Lower-boundary b is the curve for a beam that has no tensile stresses in its bottom fibers until the working load W, is exceeded; cracking starts (Cb in Fig. 1) at a load equal to W + W', where W' is the load at which cracks would commence to form if the beam were not prestressed.

Type II—a partly prestressed beam. Under the design load, freedom from cracking is assured, but limited tensile stresses are permitted (up to the modulus of rupture). If a load-deflection curve is plotted for this beam, it would lie between curves b and either c or c' (Fig. 1).

Lower limit c is applicable only when the maximum working load rarely occurs, since under this load, W, the tensile stress in the bottom fibers equals the modulus of rupture of the concrete (point Cc in Fig. 1); stresses in the bottom fibers would change from compression to tension at a load W − W'.

For working loads that may occur frequently, curve c' represents a better lower limit; under the working load, the tensile stress in the bottom fibers is half the modulus of rupture of the concrete. (Laboratory fatigue tests show that the safe tensile stress for repeated loading on concrete beams is 50 to 60% of the modulus of rupture.)

Type III—moderately prestressed beam. Under dead load, the section is designed to be entirely in compression and thus free from cracks. But cracks may form at the maximum working load, which presumably is applied infrequently. Type III beams will nearly always be free of visible cracks, and while hair cracks may appear at working loads, they will close when the live load is removed.

Type IV—slightly prestressed beam. Cracks may be visible under ordinary loading. These cracks may be harmless, provided there is no fatigue due to repetition of loading, no danger of fire and no possibility of corrosion. The load-deflection curves for Types III and IV fall between curves c and d (Fig. 1).

Curve d characterizes an unprestressed beam, which starts to crack when the load equals W' (point Cd in Fig. 1).

• **Shock absorption**—Examination of Fig. 1 indicates that there is a great difference in the amount of load that can be added to each of the four types of prestressed beams after deformations become noticeable and before failure occurs.

The four types also differ in resilience—ability to absorb shock. Since the area under the load-deflection curve is a measure of the resilience of a beam, the four boundary load-deflection curves—a, b, c and d—are repeated for comparison in Fig. 2, with the area under each cross hatched.

The area under curve a is small. That under curve b is much larger, but not as large as the area under curve c. Thus, curve c represents a

beam with a much greater resistance to shock than beams characterized by curves a and b. Furthermore, the area under curve c is not much smaller than that under curve d, which represents a beam that cracks at low loads.

This characteristic, resilience, is of importance in bomb shelters.

• **Prestress varied**—Curves a, b, c and d in Fig. 1 were drawn for four beams having identical cross sections, but different amounts of prestress. The beams were designed for the same working load, with a safety factor equal to two. Fa, Fb, Fc', Fc and Fd represent failure loads on the boundary curves. Slope of the line Fa — Fd depends on relative strengths of steel and concrete: with low percentages, the line may be horizontal.

Curve b was drawn for prestress of 2,000 psi in the concrete when the stress in the wires is transferred to the concrete. Of this 83%, or 1,660 psi, was assumed to remain effective after shrinkage, plastic flow and creep have taken place. Modulus of rupture (corresponding to load W') was taken as 1,000 psi. The beam with this load-deflection curve has zero stress in the bottom fibers at the working load, W.

To obtain curves c and c', the prestress was reduced. The beam represented by curve c may crack when the working load is applied; it then will have a bottom fiber tensile stress of 1,000 psi. Since the working load is the same as for curve b, the effective prestress must be 1,660 — 1,000, or 660 psi, and the prestress at transfer 660/0.83, or 800 psi. Similarly, for curve c', for which the maximum tensile stress under working load is half the modulus of rupture, or 500 psi, the effective and transfer prestress are 1,160 and 1,400 psi, respectively. Thus, the prestressing forces for curves c and c' are 40% and 70% of the prestressing force for curve b, respectively.

Reduction of prestressing force is of little economic advantage when all the steel wires are tensioned simultaneously and then anchored by bond to the concrete. This is not often done, however. In all other cases, reduction of prestressing force is of very great economical advantage.

It may be well to point out here that an I-shaped section is more economical for prestressing than a solid rectangular one. Since most of the material in the I shape is in the flanges, away from the neutral axis, the I-beam requires less concrete and hence a smaller prestressing force.

• **Beam types compared**—In summing up the distinguishing features of the four types of prestressed beams, it can be said that with Type I a high degree of safety against cracking is obtained, but a rather small resistance to shock. Type I members are necessary for structures, like railroad bridges, that are subject at ordinary loading to heavy impact.

Type II beams are free of cracks under working loads, but the safety factor against cracking is small. These beams are more resilient, however, than Type I. Type II construction is suitable for all structures not subject to heavy impact. It is good for guyed masts, which rarely are called upon to sustain the maximum working load and then only for a short time. For concrete with a cylinder strength of 5,000 psi, corresponding to a modulus of rupture of 1,000 psi, a tensile stress of 800 to 850 psi may be permitted at maximum working load, thus insuring a high degree of resilience with sufficient safety against cracking. (Tests show that 775 psi is a safe tensile stress for loading sustained for 30 days).

For structures, such as highway bridges, that are subject to repeated loading, but not heavy impact, a tensile stress of 500 to 600 psi may be permitted at maximum working load, and still freedom from cracks will be obtained. However, it is important that only compressive stresses occur under dead load, as with Type III.

Type III beams, under normal loading, either are crack-free, or the cracks are invisible. Under occasional maximum working loads, cracks may be visible temporarily. This type of construction may be used for roofs and some types of floors, as well as for guyed poles that have to be particularly resilient to avoid failure when guys break. Type III is also suitable for air strips and roadways, although cracks may be opened repeatedly.

Cracking conditions pertaining to ordinary reinforced concrete apply to Type IV beams temporarily when loaded. Fine cracks show under the maximum working load, which is applied more frequently than for Type III members. These cracks will close upon removal of the load. Until further experience is had, Type IV should be used only for minor structures.

• **The answer**—To obtain maximum security and economy with prestressed beams, designers should choose among the four types in accordance with the type of service the beams are expected to give. They should realize that a structure possessing a high degree of safety against cracking cannot also give early warning of overloading or possess a high resistance to shock, or be economical, compared with less highly prestressed members. Hence, designers should not give undue preference to safety against cracking.

Where there is little likelihood of overloading, Type II beams are crackless and resilient, even under fatigue conditions. But they are not as economical as Type III beams, which are suitable where temporary, fine cracks are not objectionable.

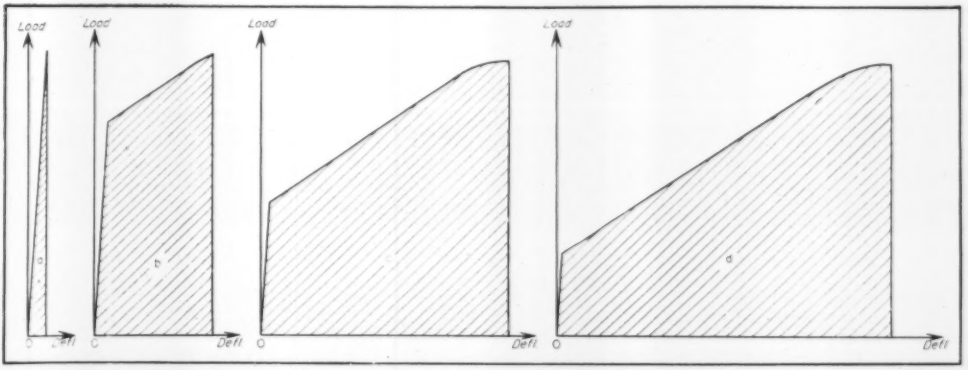

FIG. 2. AREAS UNDER CURVES a, b, c and d of Fig. 1 (redrawn above for comparison) are a measure of resistance to shock.

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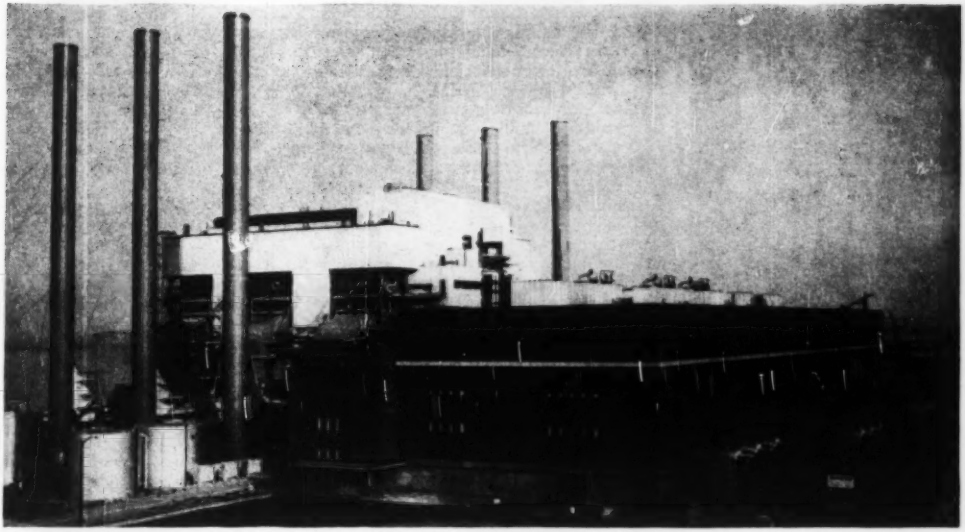


BRICK WALLS for PG & E's new Contra Costa steam plant are reinforced to make them earthquake resistant. Designers used an earthquake factor of 20% of gravity in design of these walls, which is considered a conservative factor.

Key California steam power plant has earthquake-resistant reinforced brick walls

Walter L. Dickey
Supervising Structural Engineer
Power Division, Bechtel Corp.

Carl W. Appleford
Assistant Engineer
Pacific Gas and Electric Co.

REINFORCED, grouted brick-masonry is a major structural element for a 300,000-kw steam generating plant in northern California scheduled for completion late this summer. The significance of the structure—largest reinforced, brick-masonry installation in the area—is the design for resistance to high earthquake loading. Besides that, economic studies indicated such masonry construction to be satisfactory, particularly in view of expected low maintenance cost.

The plant is the Contra Costa steam plant, designed and built by the Bechtel Corp. for the Pacific Gas and Electric Co. It is located on the San Joaquin River at Antioch, Calif., about 40 miles east of San Francisco. This location combines the advantages of ample fuel and water supplies, excellent transportation facilities, adequate foundation conditions and, last but not least, favorable location with regard to load.

This is one of the largest steam plants built by PG & E. It will augment the extensive generating capacity (both hydro and steam) that provides power for domestic, agricultural and industrial users in the northern and central California regions.

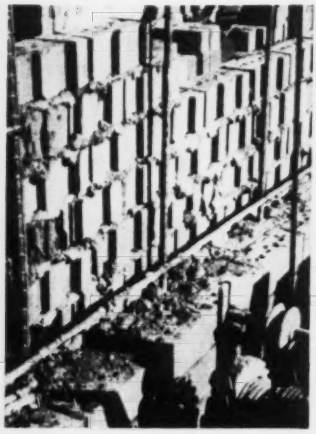
Industrial and residential load growth since the Contra Costa plant was first conceived has already made desirable a 200,000-kw. addition to the 300,000-kw capacity now under construction. This extension is currently in the design stage.

• **High earthquake factor**—The plant at Antioch is one of the largest—if not the largest—brick buildings ever designed to resist such a high earthquake loading. Another structural feature is use of reinforced masonry bond beams that span as much as 27 ft.

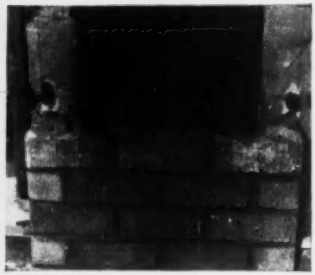
PG & E engineers placed the lateral force coefficient for design purposes at 20% of gravity. (Editor's note: This compares with sliding scales used in building codes in earthquake areas averaging about 5% for ordinary building structures.) The high coefficient was selected for this structure because the plant is in an active earthquake zone and because the structure houses a vitally important facility. The same factor would have been used for design purposes no matter what material was specified for the walls of the building. It is significant to note that brick can be designed and built to resist such forces.

In this instance, much of the lateral loading is resisted by the structural steel frame of the building. But the reinforced-grouted-masonry walls and bond beams must transmit to the columns such lateral load as is developed between columns.

• **Economical too**—Reinforced, grouted brick-masonry was selected for the 89-ft high walls—after studies of several materials—as the most economical, unit-type, masonry construction that would resist the lateral loads the walls were required to carry. Low maintenance, favorable installation cost, and pleasing architectural results were fac-



REINFORCED grouted masonry walls require: Correct and accurate spacing of bars, carefully placed, good quality grout fill; a keyed brick for mechanical bond.



BRICK COLUMNS include outer course of keyed brick. The inner brick is placed without mortar and later grouted.

BOND BEAMS are also of reinforced masonry design. Precast concrete architectural units were fitted and grouted along with the brick work.

tors in the choice of reinforced brick.

The building foundation is a composite mat footing supporting 14 ft of reinforced concrete exterior base wall. From this point up, the walls are reinforced, grouted brick. The walls have built-in, reinforced-grouted-masonry bond-beams to carry lateral loads to the steel frame. Grouted-type masonry was used to reduce to a minimum errors of workmanship that might develop in brick work.

Since steel columns and floor beams are spaced on 27-ft centers, additional brick-masonry bond beams were required at levels between the concrete floor and roof to resist lateral forces developed in the brick curtain walls.

Although ordinary building brick can be used for reinforced-grouted masonry, at Contra Costa a specially shaped brick having keyed slots on one side was adopted as strongest and most suitable. In constructing bond beams, triangular brick were also used to provide space for the heavy reinforcing bars.

• **Laying the brick**—Starting on the concrete base wall, one face of the 10-in. thick wall was laid up five courses high. Two courses of the other face were laid so that there was space for a 2-in. collar joint between. Reinforcing bars were placed by the masons as required and concrete grout poured in the collar joint space between the two faces.

From this point on, brick was laid up one course at a time with grout poured one course at a time from center to center of the brick courses. In this way, the brick was bonded mechanically by the brick keys as well as by adhesion of mortar and grout.

The cement grout was quite wet so it would flow freely into place. In spite of the wetness and the resulting high water-cement ratio, a high-strength grout resulted (6,000 psi), because the brick absorbed excess water from the grout. No special precautions for curing were required since the brick protected the grouted core.

• **Other structural elements** — Most building details were designed so that where both concrete and brick were involved, either could be placed irrespective of progress on the other.

For example, a steel beam was used at the top of the wall as part of the building frame so the concrete roof slab could be poured before brick construction progressed that far. On the other hand, some bond beams were constructed of reinforced brick with facings that were also placed by the masons. By making these bond beams out of brick instead of concrete, the masonry work could proceed without interruption. It was not necessary to wait for concrete bond beams to be poured and cured.

The roof system consists of reinforced concrete slabs spanning between roof purlins supported by trusses. Lateral forces at roof level are resisted by the roof slab acting as a diaphragm carrying lateral loadings to braced bents of the steel frame. This meant that the roof slab had to include heavy reinforcing—particularly around the edges—to transmit such loads. Some of this heavy reinforcing was built into the masonry bond beams around the perimeter of the roof.

The floor system consists generally of reinforced concrete floor slabs spanning between steel beams that are part of the building frame. These floors served as diaphragms to distribute lateral forces from the several bays to certain bents of the frame.

• **Architectural finish**—The architectural designers were able to achieve a pleasing effect on exterior walls by combining two surface textures of a commercial building brick, namely: rug-cut and smooth-face. These are supplemented for accent by precast concrete elements. Architectural treatment of the building required narrow, 30-ft high slot-type windows generally in groups of three. Mullions in this case were designed as reinforced brick columns the height of the window openings.

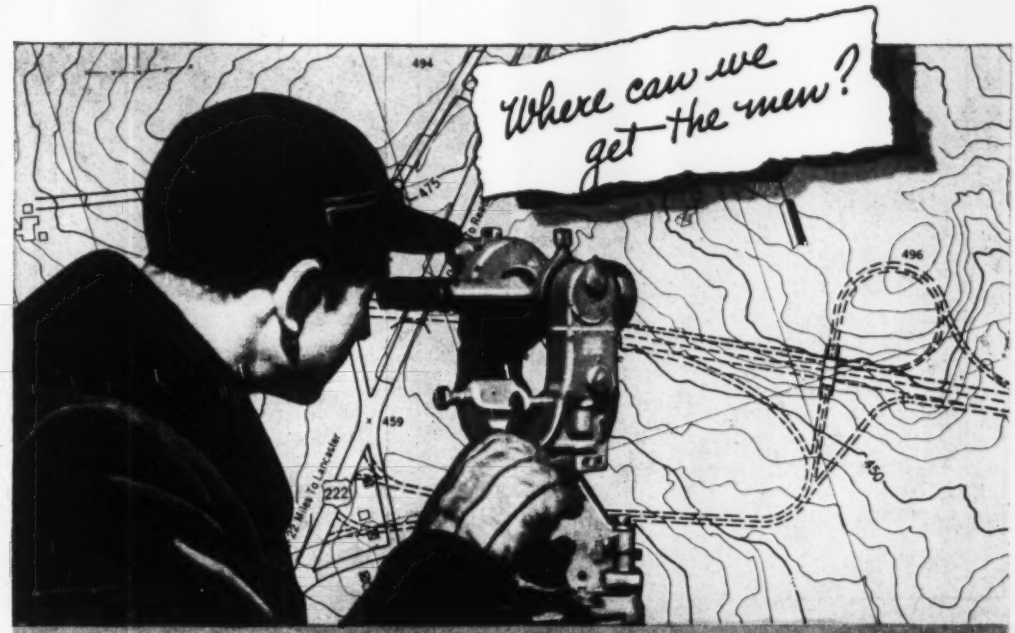
Precast, hollow concrete units involving special exposed colored aggregate were used for an architectural band encircling the building. These units were designed as part of bond beams.

Interior masonry partitions are lightweight concrete blocks with grout-filled reinforced cells. Some glazed structural tile partitions are also used and these are reinforced by similar grouting and reinforcing systems.

• **Credits**—Contra Costa steam power plant was built for the PG and E under the general direction of I. C. Steele, vice president and chief engineer. C. C. Whelchel was in charge of the steam engineering division for PG and E and Carl W. Appleford supervised elements of structural design for the power company.

The building was designed and constructed by Bechtel Corp., San Francisco, under the general supervision of J. N. Landis, chief power engineer. Walter L. Dickey supervised structural design for Bechtel and E. J. Garbarini was general superintendent in charge of construction.

The keyed brick used is manufactured under the trade name Port Costa Keybrick by the Port Costa Brick Works, San Francisco.



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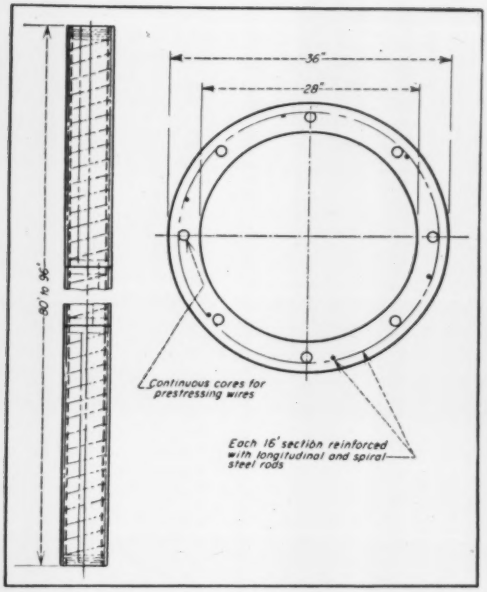
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Each 16' section reinforced with longitudinal and spiral steel rods

HOLLOW PILE is made up of 16-ft sections. These sections have enough spiral and longitudinal steel to resist handling stresses that are apt to be imposed before assembly.

PRESTRESSING takes place after sections are assembled with holes in line to receive wires. Special jack loads wires; conical wedge locks wires after stress has been applied.

First prestressed piles carry tank platform

John J. Parrett
Engineer
Raymond Concrete Pile Co.,
New York, N. Y.

PRESTRESSING has made possible a new type pile, which was used for the first time in the construction of an offshore oil-tank platform in the Quarantine Bay area of the Louisiana Gulf Coast.

The new pile is made up of precast 16-ft concrete hollow cylindrical sections, placed end to end and held together by high-strength steel wires.

Pile sections are manufactured by the centrifugal process, similar to that by which concrete pipe is commonly made. While 16-ft sections are standard, divider plates may be used to cast shorter lengths, so that any length of pile can be made.

• **Holes for prestressing**—Each 16-ft section is reinforced with a small amount of longitudinal and spiral steel to facilitate handling. Longitudinal holes for the prestressing wires are cored in the walls of the sections by means of rubber tubes stiffened internally with steel rods. When the concrete has set, these steel rods and the rubber tubing are withdrawn leaving a longitudinal hole in the cylinder wall for the prestressing cables.

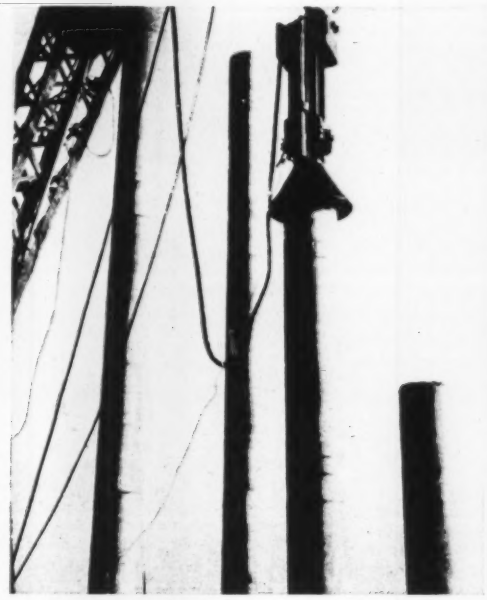
When curing of the sections is completed, they are placed end to end on an assembly rack with the cable holes in alignment. Cables of high-strength steel wire are then strung through each hole by a special machine that assembles the wires into cables and pushes them through the holes. Hydraulic jacks tension each cable to 150,000 psi, and temporary wedges maintain the tension.

The drawing shows a cross section and an assembly sketch of the pile. The centrifugal process produces a dense strong concrete with compressive strength of at least 5,000 psi in 28 days. The amount of normal reinforcement used in each section is only enough to facilitate handling without cracking. The number of cables and the number of wires per cable can be varied over a wide range depending upon the type of service for which the pile will be used.

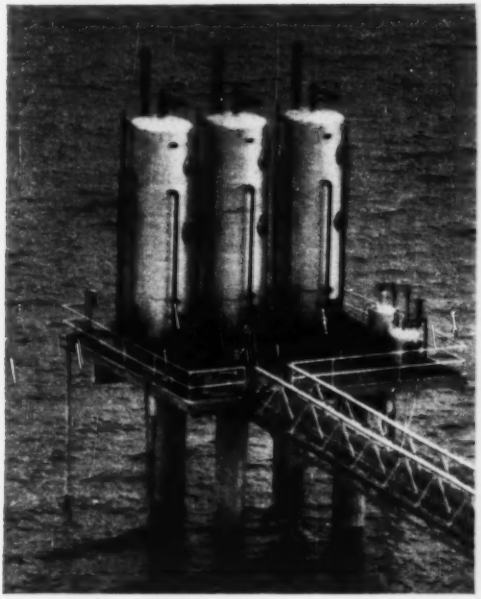
• **Wires grouted in**—When all the cables in the pile have been tensioned and locked, the cable holes are grouted under sufficient pressure to insure complete coverage of the individual wires.

After the grout sets around wires the temporary locks are removed and the wire tension is held by bond between the wires and the grout. Strain-gage measurements over a period of a year indicate that the bond on the wires is adequate to develop the full design tensile stresses. Thus, the piles can be cut off at any point after driving without destroying the induced prestress in the concrete. A full-scale test on a 96-ft pile with the cables under tension for a year and a half shows that shrinkage and creep have practically stopped with a total reduction of a little less than 10% of the original prestress.

• **The first job**—Piles for the oil tank platform were 80 ft long with an outside diameter of 36 in. and an inside diameter of 28 in. Weight was 400 lb per lin ft. They were transported to the site by barge and driven with a floating rig. Water depth is 10 ft. A steel template held the piles accurately in position during driving. Piles were



DRIVING is by single-acting hammer with conical hood. Prestress wires are grouted in, producing bond so piles can be cut off to any length without loss of prestress.



OIL TANK PLATFORM stands in 10 ft of Gulf of Mexico water. Piles furnish plenty of lateral stability as well as load-carrying capacity. Their fire resistance also counts on this job.

driven open-end with a single-acting steam hammer having a ram weighing 9,300 lb.

A precast concrete deck platform which had been cast on shore was then placed on top of the piles to complete the structure.

• **Pile characteristics**—The hollow section used for these piles has several advantages over conventional solid precast concrete piles:

1. The hollow pile has a greater point bearing area and a larger surface area per unit weight of material. The skin friction on the larger surface produces load bearing values which exceed those normally expected. An 85-ft test pile with an outside diameter of 36 in. driven on land in New Orleans carried 352 tons with a net settlement of 0.864 in. A load test on a similar pile in the off-shore structure resulted in a net settlement of 0.125 in. under a load of 190 tons. Wood piles of similar length in the soft soils in this region would be allowed working loads amounting to 10 or 12 tons per pile.

2. The hollow pile has a large section modulus resulting in high bending resistance. Piles of this kind up to 200 ft in length can be made, handled and driven without damage. This same factor provides remarkable rigidity to resist horizontal forces produced by wind, waves, earthquakes, the deceleration of heavy railroad equipment, and the impact of ships.

3. The hollow pile has a large radius of gyration in proportion to its weight. Consequently, the slenderness ratio is low when column action must be taken into account, and a greater unsupported vertical span may be utilized in design.

The use of high-strength steel wire makes possible the maximum utilization of the concrete in a pile of this type. Sufficient prestress is induced to maintain the concrete in compression under all conditions of handling and service. Since the concrete is never subjected to tension it is never cracked and therefore has high resistance to salt water and to spalling. The low maintenance expense and the high fire resistance of the structure, which is part of an oil well installation, also are important advantages of this type of construction.

The prestressed concrete piles were developed and designed by the Raymond Concrete Pile Co., which holds patents covering the process. The piles were cast and assembled by the Equitable Equipment Co. of New Orleans at its yard in Madisonville, La. The precast concrete platform was cast by J. Ray McDermott & Co. at its yard in Harvey, La. McDermott drove the piles and set the platform to complete the installation. M. B. Willey, Chief Engineer, directed the work for J. Ray McDermott & Co. Myers Van Buren was local representative for the Raymond Concrete Pile Company.

Northwest talks bridges; traffic growth the spur

Proposed bridges are in the news again at Seattle, Wash. (ENR Feb. 22, p. 24).

The state highway department has ordered a second survey on the need of another bridge across Lake Washington east of the city. The lake has been spanned the past 10 years by a floating concrete bridge on which traffic is increasing much faster than anticipated.

In Tacoma, 30 miles south of Seattle, the Chamber of Commerce has announced its opposition to a second bridge from Seattle west across Puget Sound to Vashon Island. This structure, also planned as a floating type and which would be linked to the Olympic Peninsula by yet another bridge, would hinder navigation, says the Chamber.

An industry finds . . .

How to flocculate greases so they won't clog sewers

Harvey F. Ludwig
Assoc. Prof. of Sanitary Engineering,
University of California,
Berkeley, Calif.

Russell G. Ludwig
Sanitary Engineer,
Ludwig Bros., Engineers,
Pasadena, Calif.

BECAUSE greasy industrial wastes often clog sewers, many public sewerage agencies require a high degree of treatment before such wastes are accepted. One California plant found that by converting such grease to a suspended floc, it had produced a waste that could be discharged to the community's sewers.

The significance of this case is (1) that the waste could be flocculated and (2) that the county sewerage authorities involved would accept discharge of such suspended matter into the sewerage system.

Treatment involved for this greasy waste involves a conventional grease trap followed by alum flocculation. After it is discharged to the sewer, the floc is carried along by the sewage flow and is eventually removed in the sedimentation basins of the county sewage treatment plant. The installation made by the industrial concern involves a minimum of expense and has been found to be completely satisfactory to the treatment plant officials over the first year's operation.

• **What the wastes are**—Wastes in question are produced by the A. Rooke Cooperage Co., located in Los Angeles county. They are derived from washing heavy oils and paints from used steel drums in the process of reconditioning the drums. Steam and caustic soda are the cleansing agents. Thus, the wastes have a high alkalinity (pH is 11) as well as a high grease concentration. Quantity averages 30 gpm over an 8-hr work shift.

Even after passing through a conventional grease trap, discharge of these wastes resulted in rapid accumulation of grease on the sewer walls. Close examination showed that a considerable portion of the grease remained in an emulsified state after the waste passed the grease trap. This emulsified grease readily adhered to surfaces that it contacted. The problem then was to remove the emulsified grease or else modify its properties to prevent deposition in sewers.

• **Waste properties**—A sample of the waste was collected, mixed and let stand. Within 1 min, a thick layer of grease (about ¾ in. in a total depth of 12 in.) collected at the surface and was removed by skimming. Remaining solution, containing very little floatable grease, was designated as the "skimmed waste" and was used for subsequent flocculation tests.

The skimmed waste still contained all of the settlable solids of the original waste—amounting after 2 hr to 32 ml per liter. Grease content of the skimmed waste was 2,510 ppm (determined by standard procedure, i.e., boiling-chilling-filtration-extraction).

• **Flocculation studies**—Various coagulants were tried to determine if the grease could be flocculated for later removal by sedimentation. Some separation was found using a sulphuric acid dosage. However, best results were obtained with alum.

Dosages of 6,000 to 8,000 ppm of alum ($Al_2(SO_4)_3.18H_2O$) produced a good floc. Best results, of course, were obtained with the higher dosage but good results were found with the lower dosage. Both formed relatively large floc particles with no tendency to adhere to surfaces. The higher dosage resulted in a pH of 5.5 and the lower of 10.0. Residual grease concentration for the higher dosage was 13 ppm and for the lower dosage was 115 ppm.

It was concluded that the emulsified grease in the skimmed waste is de-emulsified by the lowering of the pH caused by the addition of alum. Further, the freed oils are simultaneously integrated into the alum floc, resulting in a type of suspended material innocuous to sewers. Besides this, the new suspended material is of low density and thus readily transported by the sewage flow.

The pH data are believed significant in demonstrating that the floc is stable over a pH range from 10 to 5.5. This indicates that the floc properties would not undergo change after passing to the sewer and mixing with other wastes of different pH value that might be present.

• **Treatment facilities** — Treatment works installed as result of these studies included facilities for passing the waste through a conventional grease trap as mentioned in the foregoing followed by flocculation with alum. A mixing period of 40 min in a 60-rpm mechanical mixer provides the necessary agitation.

A very economical source of alum is available from the nearby Filtrol Corp. that produces a large quantity of liquid waste, essentially a 10 to 20% solution of alum. This is delivered to the A. Rooke Cooperage Co. at $17.60 per ton of equivalent $Al_2(SO_4)_3.18H_2O$. The liquid solution has been fed to the flocculation tank by means of a constant-head orifice, but an automatic pH controller is now being installed to establish more positive control.

The studies were made for the owner by the Ludwig Bros., engineers, Pasadena, Calif., represented by Russell G. Ludwig. Consultant on the work was Harvey G. Ludwig, associate professor of sanitary engineering, University of California.

Water, sewage works funds go mostly for materials

Cost of constructing new water and sewage works is 40 to 50% in materials, 30% labor. These figures result from a sampling of 200 projects built 1948 to '50. Bureau of Labor Statistics and the Public Health Service joined in the study.

One-fifth of the money spent on water treatment plants goes for metal products—pipe fittings, and reinforcing steel; 15% is for concrete.

For water distribution lines ¼ the cost is metal products; 10% is spent for asbestos pipe and other stone, clay and glass products.

Sewage works materials costs average a bit less than those on waterworks: about 40% of the total. Labor eats up about the same portion, 30%.

Equipment charges were found in the sampling to be highest on construction of sewage collection systems, due to extent of excavation calling for equipment in this work.

For a breakdown of construction costs of plant elements in place see "What Can You Learn from a Sewage Project?" (ENR Aug. 31, 1950, p 41). In this article, Author M. H. Klegerman considered cost of completed work – materials plus labor – and showed that in Winchester, Va., 37.8% of the total cost of the recently completed plant was for concrete work, 11.7% for piping, 30.1% for a group of items including plant equipment, heating and electricity.

Concrete Frames and Floors

speed essential construction—economically

In carrying out its gigantic "project-a-month" program the New York City Housing Authority has demonstrated conclusively that when construction is designed with reinforced concrete frames and floors, construction time can be reduced. Time saved, of course, also means cost saved.

Marble Hill Houses is an excellent example. This huge project consists of eleven identical 14-story buildings with 1,400,000 sq. ft. of floor area. Eleven sets of forms, each used 14 times, made it possible to erect up to two stories per working day. In all, 154 floors and 11 roofs required only 123 working days (average of 1⅓ floors per day)—an accomplishment attained by engineering know-how, sound design and an experienced crew.

Photo shows a general view of the New York City Housing Authority's Marble Hill Houses under construction in the Bronx. The architect, John Ambrose Thompson; the structural engineer, Tuck & Eipel, and the general contractor, Cauldwell-Wingate Company, are all of New York City.

Concrete frame and floor construction has proved its speed and economy in all types of construction essential for defense—in tall structures as well as in buildings of six stories or less. It is ideal for hospitals, schools, industrial plants, apartments, public or office buildings.

Structurally, reinforced concrete frames and floors are sturdy, durable and firesafe. Economically, such construction makes possible substantial savings because it speeds work yet is (1) moderate in first cost, (2) requires little maintenance, (3) gives long years of service. The result is true ***low-annual-cost*** construction that makes concrete frames and floors a sound investment. Write for free literature. Distributed only in the U.S. and Canada.

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Heavy-duty engineered for the long haul

Civil-defense-conscious suburb readies water supply for emergency

PARK RIDGE, ILL.—its mind on civil defense and its waterworks already underground—has further safeguarded supplies by installing fully automatic controls and standby diesel power, a modernization for better service.

Water for this residential suburb (pop. 16,500) comes from Chicago. Two lines, 12- and 24-in., feed its 2-mg underground reservoir, keeping its working capacity at about 725,000 gal as an adjacent pumping plant, also underground, pushes water out to the distribution system.

With no elevated tank, no stand pipe, Park Ridge must bank on its pumps. And it can do that now, to a greater degree than before, with automatic controls to keep pump capacities in line with load conditions and stand-by power to switch on in the event of power failure.

An important benefit in converting the installation from manual control is, of course, the saving in operational expense. ($10,000 per year.)

New controls can step up pump output automatically in easy stages by switching a 6-, 8- and a 10-in. pump into operation, singly or in combination:

- Step 1—2.27 mgd with the 6-in. pump
- Step 2—3.5 mgd with the 8-in. pump
- Step 3—5.47 mgd with the 10-in. pump
- Step 4—Combines 1 and 3 for 7.75 mgd
- Step 5—Combines all three pumps for 11.2 mgd

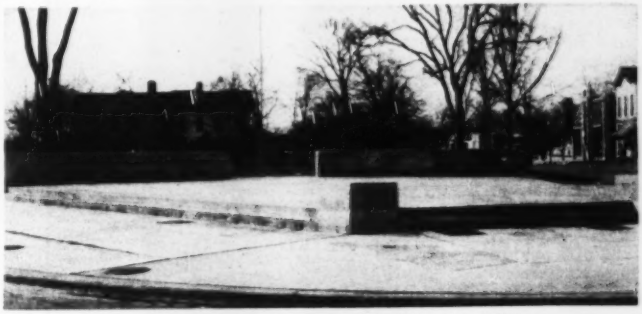
The 8-in. pump alone handles average daytime load. The 10-in. pump alone will satisfy all but peak summer and fire fighting loads. Step five, which shoots the works, would be needed only in extreme emergency.

Automatic controls (trade-named Autocon) operate through impulses received from a monitoring system in the service lines. Water pressure is not permitted to drop below 48 psi. When usage is up and pressure starts down, the Autocon selects another pumping step with the next larger capacity. At a permissible maximum pressure in the line the system switches back to less pumpage.

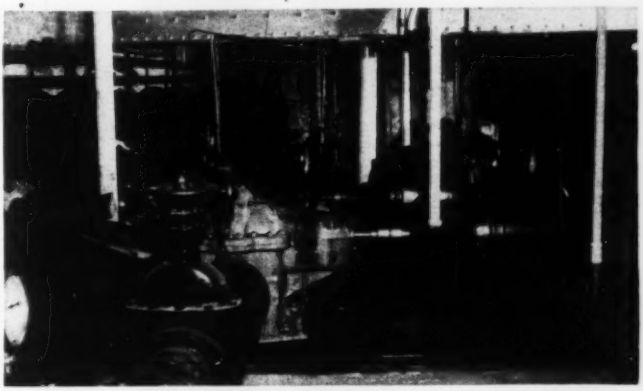
Pump horsepower ratings are 60, 75 and 125 hp. The diesel engine installed as a standby power source drives a 60-hp electric motor that powers the 6-in. pump. This, in emergency, can maintain adequate pressure for fighting fires or protecting health by continuing use of sanitary facilities. (It will also power police shortwave radio, police station lights, fire siren and pumping station lights.)

Future plans call for automatic start-stop equipment that will kick on the diesel-electric system if power fails.

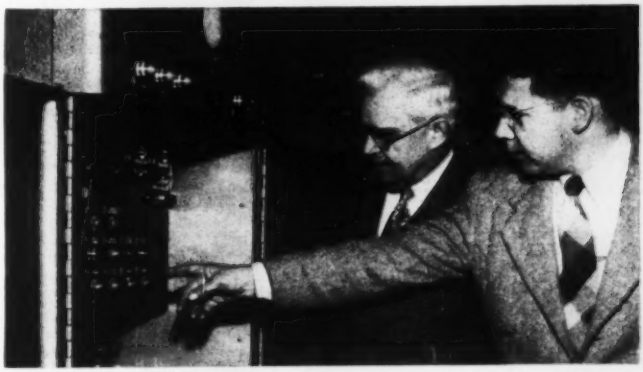
D. B. McCabe, civil engineer, is city manager of Park Ridge. A. P. Haake is mayor. Electric Service Engineering Co., Chicago, did the installation. Caterpillar Tractor Co. supplied the diesel engine--and all the above information.



UNDER THIS SLAB where once stood the Park Ridge city hall is . . .



THE PUMPING PLANT, now equipped with an emergency powerplant and . . .



FULLY AUTOMATIC CONTROLS. City manager tells mayor how they work.

READER COMMENT

Tighter steel specs needed

Sir: In his interesting study of "Brittle fractures in welded bridges" (ENR April 26, p. 46) Prof. P. P. Bijlaard states that in Europe plate thicknesses more than $\frac{5}{8}$ or 1 in. are generally avoided for welded structures in order to reduce shrinkage stresses.

This seems to be a rather severe limitation, which, if adhered to, would tend to reduce greatly the field of welding. Design practice in this country is considerably less restrictive. Standard specifications for welded highway and railway bridges (American Welding Society) permit welding of plates up to 2½ in. thick, requiring only that any material above 1 in. in thickness should be preheated or should have a limited carbon content. American Water Works Assn. design specifications for water tanks (accepted also by the Corps of Engineers for design of surge tanks) call for preheating any material exceeding 1¼ in. but do not limit plate thickness at all. The API-ASME code for unfired pressure vessels limits plate thickness to 2 in. but only for certain steels. Finally, American Institute of Steel Construction specifications, which cover steel buildings, require only that the temperature of heavier sections during welding should not be less than 70 F.

Welded bridges in this country are comparatively few. However, plates considerably heavier than 1 in. were used in some of them. A few years ago, on a large penstock job, 2⅜-in. plates were field welded successfully, with an induction method for preheating. One of the leading manufacturers in this particular field believes that welding of 2-in. plates under field conditions is not a problem anymore.

Despite this, the lessons of welded bridge failures in Europe (before the war) and recently in Canada cannot be dismissed readily. A limitation imposed in Belgium and in Holland (according to Professor Bijlaard) on content of carbon in common structural steel seems to be a step in the right direction. We can add that this practice has been also adopted by the Standards Association of Australia. However, corresponding specifications for structural steel in this country (ASTM A7-49T) do not contain such a limitation. Specifications for carbon steel plates (ASTM A283 and A285-49T, flange quality) used in penstock and surge tank construction are not different in this respect. It is only Federal Specifications QQ-S-741 (structural steel) and ASTM A285-49T, firebox quality, that impose a limit on carbon content.

A recent investigation of quality of steel in reinforcing bars made by the U. S. Bureau of Reclamation (Tessitor and Rosewarne: Economy Through Better Control of Reinforcing Steel, American Concrete Institute JOURNAL, Dec., 1950) indicates that when the carbon content is not limited by specifications, the range of strength and ductility of steel delivered by the mill can be so wide as to wipe out any pretense of uniformity of material.

This possibility will be alarming to those who take interest in the field of welding. Some thought should be given to tightening of specifications for steels used in welded structures.

ANDREW EBERHARDT
Chicago, Ill.

Engineering unity

Sir: While initiation of the study looking toward greater unity in the engineering profession which was reported in your issue of June 14, p. 28, is to be highly commended, there is no assurance that the profession as a whole will accept any one of the plans as they now stand.

Most of us have been hoping for many years for a chance to do something to unify the profession and for a chance to express ourselves on the matter. The move by EJC has provided that opportunity.

The profession missed the boat by not unifying during its early development instead of permitting only autonomous technical societies to build into small but powerful organizations. We will now have to do in reverse the logical procedure that was followed by the American Medical Association in achieving outstanding professional strength first. It is hoped we will not miss the boat again while there is an unusual opportunity to unify. If all selfish interests to preserve certain relatively minor rights and powers can be forgotten in light of the bigger needs of the profession as a whole, then we can gain unity.

Aside from any comments regarding the specific unity organizations proposed, it is believed we must first establish an objective. To a great many engineers the primary justification for unity in our profession is to achieve adequate economic and professional recognition of the character already gained by the powerful medical profession. Such an objective is vital if we choose to establish engineering as a real profession. It is hard to believe we will ever do it unless we have an organization that can include ALL QUALIFIED ENGINEERS.

If such an organization is established we should have a potential even more powerful than the AMA because of the greater numbers involved. Whether we like it or not, it takes power through numbers to gain proper recognition, legislation, and action in these times. While most of us would condemn the lack of ethics, lack of public interest, the ruthlessness, and violence practiced by the labor unions, we still must recognize their strength and power, which was gained through numbers. If we wish to achieve higher economic and professional goals (and I believe most of us do) we must do it through an organization that has real power, as well as represents the engineering profession.

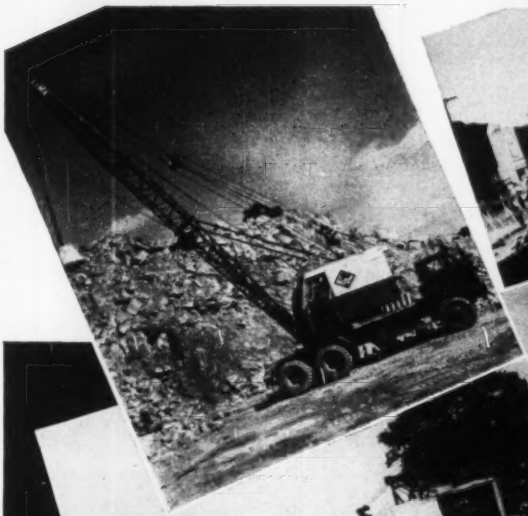
If real unity is not gained now there is a good possibility that a number of strong engineering collective-bargaining groups, which are growing and consolidating, will provide what a lot of engineers feel they need. It is astounding to learn just how strong some of these organizations are, and they are expanding rapidly.

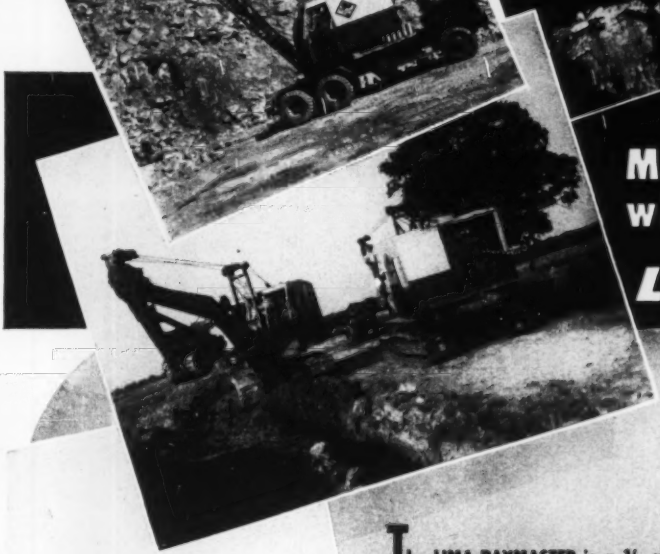
In studying the four plans thus far proposed, it appears there is an attempt to preserve existing power within presently autonomous organizations and lack of recognition of the primary need, which is ONE ALL-POWERFUL GROUP to represent the engineering profession. If gaining real unity means shifting the technical societies to a relatively subordinate position, many of us who are loyal and devoted technical-society members can see no harm done. It is understood the medical profession operates in such a fashion and we have a long way to go to equal them. The technical worth of the present societies would not be diminished at all.

To get down to specific plans proposed by the Exploratory Group, it appears that Plan C comes closest to the objectives expressed above, but it would need some major alteration in the plan of management and membership. It is not believed the technical societies should be predominant in the governing body, except through their members as "individual members" of the unity organization. Each individual member should have his one vote in determining the management and policies of the unity organization.

It is hoped that with real awakening of a grass roots interest in this vital matter something significant and useful will result.

T. H. EVANS
Dean, Division of Engineering
Colorado A & M College
Fort Collins, Colo.





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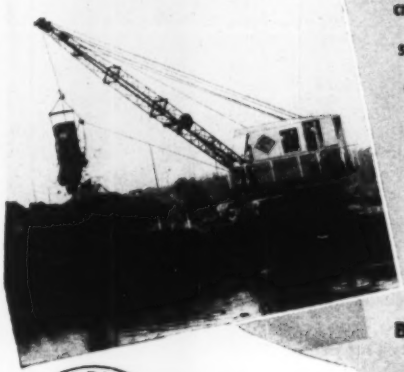

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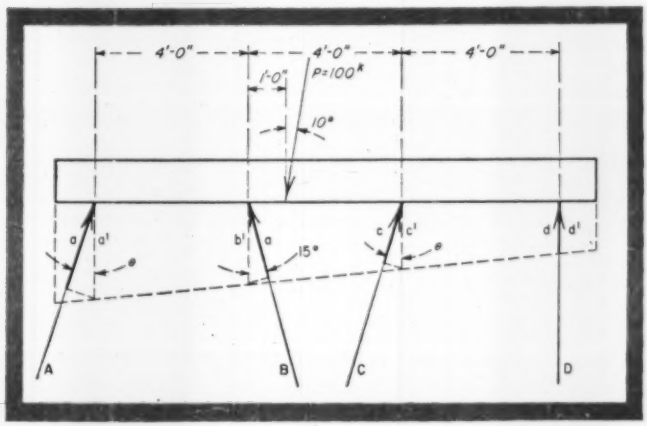
New Apartment Hotel in New York — This 15-story-plus-penthouse apartment-hotel, occupying the west blockfront of New York's Madison Avenue between Sixty-first and Sixty-second Streets, is known as The Carlton House. It has 166 apartments, each equipped with serving pantry and service vestibule. It has a cocktail lounge, men's bar, and dining facilities. In some respects The Carlton House is patterned after the old Ritz-Carlton Hotel, and it has virtually the same staff which operated that famous structure. Its limestone and red-brick exterior covers a steel framework of Bethlehem Structural Shapes. *Contractor:* John Lowry, Inc., New York; *Architect:* Kenneth B. Norton, New York; *Structural Engineer:* Sydney Frieman, New York; *Steel Fabricator and Erector:* Lehigh Structural Steel Co., Allentown, Pa.

BETHLEHEM STEEL

FIELD AND OFFICE



Pile cluster design using approximations

The design of a cluster of battered piles to hold an inclined force may be accomplished by the solution of simultaneous equations. However, the number of conditions required for static equilibrium is one more than the number of unknown pile reactions. To make the solution possible, one of the required conditions—that there be no shear across the piles—can be introduced into the computations by approximation.

When the sequence of simultaneous equations has been worked out, the solutions following with adjusted values of θ can be performed rapidly.

To do this, assume that the force in the piles is proportional to the settlement of the top of the pile, and that the footing is sufficiently rigid to maintain a straight line when piles are stressed.

In the figure, load $P = 100$ kips is the resultant of 98.5 kips gravity load and 17.37 kips lateral force such as wind, earthquake, or arch thrust. The angle of batter θ of piles A and C will be adjusted so that the pile cluster will hold force P without subjecting the piles to horizontal shear. Assume that allowed pile load is 17.5 tons.

Vectors a, b, c, and d represent stress in and therefore the deformation of the piles and a', b', c' and d' the settlement of the footing. As a trial value assume $\theta = 20$ deg. Four of the five requirements for balanced reactions are thus:

1) $4\,B \cos 15 + 8\,C \cos 20 + 12\,D - 5\,P \cos 10 = 0$ (Sum of moments about pile A equal zero.)

2) $A \cos 20 + B \cos 15 + C \cos 20 + D - P \cos 10 = 0$ (Sum of vertical components of forces equals zero.)

3)
$$\frac{1}{3}\left(\frac{A}{\cos 20} - D\right) + D = \frac{C}{\cos 20}$$
(In deflected position, the top of pile C lies on a straight line between the tops of piles A and D)

4)
$$\frac{2}{3}\left(\frac{A}{\cos 20} - D\right) + D = \frac{B}{\cos 15}$$
(In the same way, B lies on a line between A and D.)

Solution of these four equations simultaneously gives pile loadings of $A = 33.9$ kips, $B = 28.9$ kips, $C = 22.4$ kips, and $D = 17.7$ kips. Based on these values, the algebraic sum of the horizontal components of the pile forces is equal to 33.9 sin 20 − 28.9 sin 15 + 22.4 sin 20, or 11.77 kips. This is less than P sin 10 = 17.37 kips which is required for equilibrium. The batter of piles A and C must be increased to provide an additional 5.60 kips horizontal resisting force, of which $5.6 \times 33.9/33.9 + 22.4 = 3.38$ kips is allotted to pile A. Adjusted sin θ is 3.38 + 33.9 sin 20/33.9 = 0.442, for which $\theta = 26$ deg 15 min.

Recomputation of the simultaneous equations with this new value of θ gives $A = 34.6$ kips, $B = 30.6$ kips, $C = 22.2$ kips, and $D = 17.7$ kips. The algebraic sum of the horizontal components of these forces is still 0.16 kips less than required for horizontal equilibrium. For practical purposes the computations may end here. An additional step in the procedure, however, shows $\theta = 26$ deg 26 min and $A = 34.7$ kips, $B = 30.6$ kips, $C = 22.2$ kips, and $D = 17.8$ kips. Pile loads are less than 17.5 tons, the assumed allowable.—W. D. Bigler, Structural Engineer, Long Beach, Calif.

ANOTHER PIPE goes to place under bridge sidewalk. Hooks at top of jig will rest lightly on hand rail, giving accurate position for pipe installation.

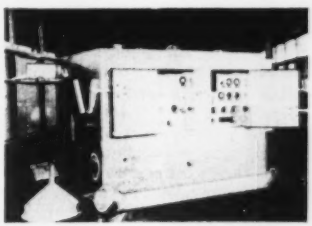
Crane-handled platform aids pipe-hanging job

Placing a pipeline under a projecting bridge deck was accomplished easily with the aid of a scaffold jig handled by a truck crane.

The jig consisted of a two-bent framework. Each bent had one vertical with a top hook that rested lightly on the bridge railing when the jig was in correct position for pipe-setting; at the bottom of the vertical a braced horizontal member extended both ways; the inward projection carried a working platform and the pipe to be set; the outrigger carried a counterbalancing length of pipe.

In preparation for installing a pipe length, the crane operator set the jig on the bridge deck. Laborers placed a length of pipe on the jig, and the operator hoisted jig, laborers, and pipe over and in under the rail. There they hung and joined the cement-asbestos pipe.

The method was chosen in preference to a bridge-rail-mounted scaffold (cumbersomeness and danger of damage to rail) and a barge-mounted scaffold (too much tide range).



STEAM GENERATOR for melting snow and ice produces 200 gal per hr of water for drinking and other uses. Developed by the Army's Research & Development Laboratories, it has potential uses for jetting in ice and frozen soil, as well as producing water in frigid areas.

MUNICIPAL

San Francisco builds large new wharf

An outsize wharf is under construction on the San Francisco Embarcadero, formed by the novel device of filling in the slip between two existing piers.

The $1,500,000 new wharf will give space for storing two full shiploads of cargo ready for docking vessels, saving each about three days in loading time. A depressed center section will permit truckbed-height – and off-street – loading; some 7,000 ft of track will provide rail service.

The 150,000-sq ft reinforced concrete deck will sit upon some 1650 reinforced concrete piles, from 50 to 86 ft long. Each pile is topped by a reinforced concrete "jacket" which is filled with additional concrete to bring all piles up to an equal height.

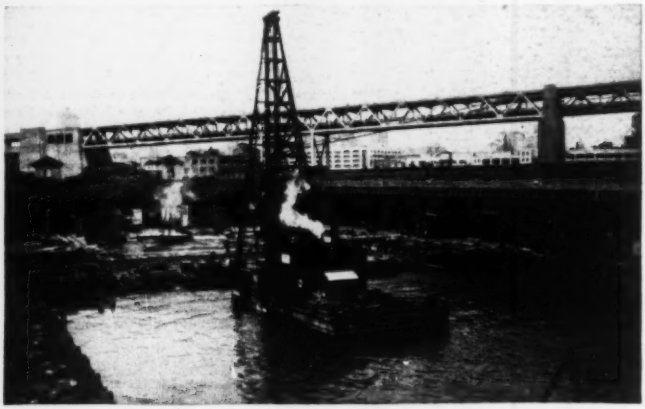
About 6500 cu yd of concrete is being poured for the platform, using a conveyor and wooden panel forms.

The main problem of the major contractor, Ben C. Gerwick, Inc., is the lack of elbow room for heavy equipment between the two existing piers—they're only 200 ft apart.

A pile driver could be used for the piles sunk in the center section, but a 35-ton derrick had to be used to set and drive those up close to the present wharfs. The piles were set and held in position during driving by steel templates.

Another problem was caused by the depressed center section—it is so low that the construction area is covered during high tide.

Engineers on the job are Harry Squires, chief engineer for the California Board of Harbor Commissioners, and his assistant, S. S. Gorman. Don Weaver is superintendent for Gerwick. Completion is scheduled for October.



SITE OF EXPANDED WHARF—Concrete deck between two existing piers on San Francisco Embarcadero will expand wharf space to allow storage of two full shiploads of cargo, ready for speedy loading.

Cities consider raising water service rates

The matter of rates to be charged the public for water service is engaging the attention of municipal officials to an increasing extent in these times of high costs of everything.

Here are recent developments in five typical communities:

• **Glendale, Calif.**—The city council, in search of funds to expand facilities in its water department, has undertaken study of an ordinance to raise water costs to consumers by about 30%—from 13¢ to 17¢ per 100 cu ft. The measure under consideration would also raise from 27¢ to 30¢ the price for 100 cu ft of water in fringe areas and for emergency sales of water. L. W. Grayson, public service department manager, said the new rate would compare favorably with those of cities in southern California of like size—13¢ per 100 cu ft in Burbank, 15¢ in Pasadena, 22¢ in Santa Monica, and 23¢ in Long Beach.

• **Bristol, R. I.**—Increased taxes, wages and other costs have led the Bristol Water Co. to launch a study preliminary to seeking a rate advance. Charles A. Maguire & Associates, Providence engineers, will make an inventory of the property, and an allocation of rates for Barrington, Bristol and Warren is to be carried through. A development program totaling about $1,000,000 is involved. This includes additional pumping and filter equipment, a mile of transmission mains in Warren; a new pumping station, purification plant and standpipe in Barrington; and projected wells, pumping facilities and mains in Bristol. F. P. Stradling, general manager, says that in the last four and a half years connections have been installed to about 1,800 new homes. The company is a subsidiary of the American Water Works Co., Inc., Philadelphia.

• **Columbus, Ohio**—The 40 percent increase in water rates which became effective last Sept. 1, will be sufficient to finance the $10,000,000 Big Walnut Creek Reservoir and waterworks according to a report by Water Superintendent Paul M. Laux. The increase will bring in an estimated additional $800,000 a year. However, Laux said it would be unwise to reduce the rates to a 33 percent increase which the city council has hoped for.

• **Youngstown, Ohio**—Mayor Charles P. Henderson has asked Mahoning County commissioners to agree to a 25 percent increase in water rates for users outside the city in three county sewer districts. The request is due to the lack of a surplus supply. The present contracts limit the city obligation to furnish water at city rates to the period during which the supply is adequate. Alvord, Burdick and Howson, Chicago engineering firm, recently reported the need for additions to the plant and water supply. Nearly five years ago the city attempted to modify the suburban contracts by increasing the charges 10 percent over Youngstown water bills, but the Ohio Supreme Court upheld lower court rulings that contracts were valid and that the city could not charge a higher rate for outside sales. The court also held that the agreements are subject to termination by mutual consent of the parties, when all of any sewer district becomes annexed to the city, or when the city no longer has surplus water available for sale.

• **Chicago, Ill.**—A proposal to increase Chicago's water rates is being studied by the city council. It was made by Commissioner of Public Works Oscar E. Hewitt, who pointed out that the present charges are too low to pay for the proper operation of the water plant. He did not disclose what the new rate should be, but it was indicated that the boost may be 50 or 60 percent. The present

(*Continued on page 50*)

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Municipal . . .

rate of 60 cents per 1,000 cu ft is the lowest in the country. Hewitt observed in his request that the city's basic rate has not been raised in 30 years. Last year revenues from the sale of water totalled $18,500,767. In the meantime, the Public Service Commission of Indiana has authorized the boosting of average monthly residential water charges in Indianapolis from $1.80 to $2.56.

Municipal Briefs

• **To beautify Buffalo**—A face-lifting of downtown Buffalo, N. Y., to provide parking space and beautify the area was proposed in a resolution sponsored by Council President Peter J. Crotty and three other officials. It calls for demolition of buildings in two blocks bounded on the north by Seneca St., on the west by Main, on the south by Quay and on the east by Washington. There would be a huge parking lot or open-ramp parking garages, all to be attractively landscaped. The resolution also envisages the construction of a promenade on the north side of the city auditorium, running from the Lower Terrace to Washington St.

• **Zoning problem**—The right of Akron Ohio, to eliminate a business plant established in a residential district before a zoning restriction was passed, has been upheld by Judge Abner D. Zook. The ruling came in the case of Taft Chapman, charged with operating a junk business at 333 Euclid Ave. in a residential district. The business was already in operation in 1922 when the zoning ordinance was passed, but in 1947 the junk yard was altered by the grading of a vacant lot and removal of trees and shrubbery. This improvement program was an unlawful extension of non-conforming use, the judge ruled. An ordinance passed in 1950, intended to put Chapman out of business, was held constitutional.

• **Detroit to rent disposal units**—Michigan Legislature has passed a bill permitting Detroit to purchase garbage disposal units and rent them to home owners. The purpose, according to Mayor Cobo, is the possible elimination of the present antiquated garbage collection system. Financing would come from regular revenue or credit bonds. The rental fee yet to be determined would be included in water bills. The plan would also help do away with rat-infested alleys.

• **Compulsory off-street parking**—City Council of Toledo, Ohio, has enacted a measure regulating off-street parking, requiring that all new structures outside of the central business district provide adequate off-street parking facilities. The measure affects apartments, theaters, arenas, auditoriums, clubs, dance halls, stadiums, hospitals, hotels, tourist courts and motels, com-

FOR BETTER VEHICLE CONTROL—Eight Alcoa aluminum traffic control arches now regulate the flow of traffic over the Delaware River bridge between Philadelphia, Pa., and Camden, N. J., one of the most heavily traveled bridges in the country. Each arch holds 16 red and green signal lights to indicate which lanes are closed and which are open to traffic in either direction. Spaced at intervals of 750 ft along the 1.8-mile long span, the eight arches make it possible to control traffic for the entire length of the bridge. Formerly there had been only two control arches, located at the bridge towers. The 79-ft wide bridge roadway is divided into eight traffic lanes, which can be opened and closed in any possible combination under that figure. Each of the arches weighs 8,700 lbs and is 84 ft long, four ft wide and five ft deep. They were manufactured by the Pittsburgh-Des Moines Steel Co.

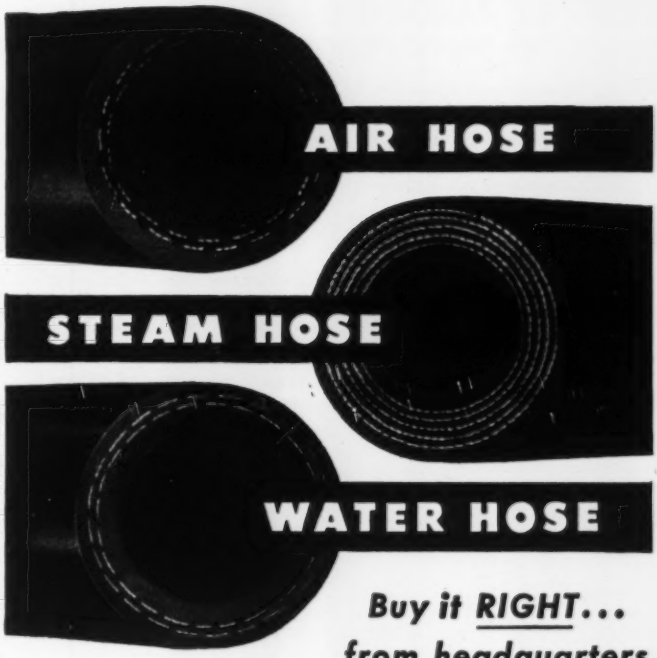
mercial buildings, bowling alleys, medical and dental offices, taverns and restaurants, mortuaries, and industrial buildings.

• **Water system survey**—Four civil engineers representing two New York City firms have started a four months' survey of the water system of St. John's, Newfoundland. Two men from the Malcolm Pirnie Engineers are working on the supply volume and quality of the water. Two from the Pitometer Co., are determining the water leakage volume. During a number of years past, engineers from the Pirnie engineering firm have made a number of surveys of the St. John's water supply. It is the belief of the city council that the city has been lucky to avert serious water shortages at times because of great leakage.

• **Don't like lagoons**—Thirteen suburban towns west and southwest of Chicago are opposing construction of six Chicago Sanitary District "lagoons", claiming that they are malodorous. The district now has 24 lagoons in an area surrounded by the suburbs of Summit, Bedford Park, Justice, Hodgins, Brookfield, Lyons and Willow Springs, LaGrange, Congress Park, Bridgeview, Oaklawn, McCook and Western Springs.

• **Water shortage**—Though the city of Bowling Green, Ohio, will have plenty of water this summer, when a $1,500,000-system to bring water from the Maumee River is scheduled to begin operation, in May the city was proclaimed in a state of emergency due to a "critical and dangerous" shortage of water. Mayor C. W. Dick issued the proclamation to the city of 8,000 after three days of continued public appeals to conserve failed to alleviate the situation. The city's 1,000,000-gal reservoir contained only 150,000 gal in reserve and the 500,000-gal elevated tower only 250,000 gal when the proclamation was made. The city's 43 wells were pumping steadily but could not keep up with the consumption of 1,200,000 gpd. There was a 3-day shutdown of the city's public schools and a drastic curtailment of activities at Bowling Green State University, including the elimination of all physical education classes requiring showers, use of paper plates and cups in dining halls, and cutting off steam heat. Loudspeaker cars patrolled the streets, asking housewives to delay their washdays to conserve water. Similar appeals have gone to all industrial consumers, and penalties are planned against persons found wasting water.

(Continued on page 53)



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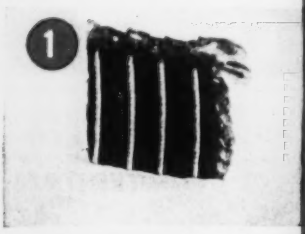

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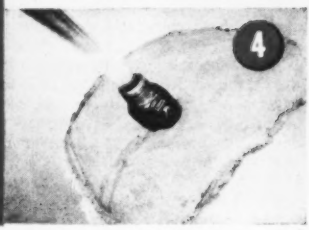

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Municipal . . .

• **Railroads may help city**—If the U.S. Government will permit the Nashville, Chattanooga & St. Louis Railway to purchase part of the federally owned tract at the old classification center on Thompson Lane, one mile south of the city limits of Nashville, the city will face one of the greatest industrial developments in its history. The proposal involves a multimillion dollar venture to be jointly shared with the Louisville & Nashville Railroad. There would be a complete removal of the Kayne Avenue yards with the conversion of the land now used for rail yard purposes for the benefit of private industrial and business enterprises. Fulfillment of this plan will make a large land area available for construction of warehouses and structures for industrial and wholesale business projects located at rail track level. The frontage along the Church Street, Broadway and Demonbreun Street viaducts would be available for retail businesses. With completion of this proposed project the only tracks that would be retained in the downtown area would be utilized for through traffic in and out of Union Station, and they would be completely covered.

• **Parking pavilion**—Samuel M. Kaufman proposes to build a 1500-car parking pavilion with stores and a union bus terminal at Milwaukee, Wis. The site probably would be the area bounded by N3d and N4th Sts. and W. Wells St., and W. Kilbourn Ave. The plan is looked upon favorably by city officials, it is said.

• **Hidden costs**—Chicago highway engineers and city officials are wondering what the extension of the Outer Drive will cost in wear and tear on city streets. About 1,700,000 cu yd of rubble and clay will be needed to fill in the lake shore for the quarter-mile extension. This means 700 truckloads a day, five days a week for about a year. The Chicago Park District has proposed using rubble from the excavation of the Congress St. super-highway, now under construction. This is the best fill available. Some of the rubble would have to be hauled as far as 11 miles and officials agree that the resulting pounding of the street pavements would be heavy. Hauling the rubble would cost an estimated $850,000. Sand, at $1.35 a cu yd, would cost $2,300,000. But the total saving, if any, cannot be determined until the damage to the streets by the heavily-loaded trucks is known.

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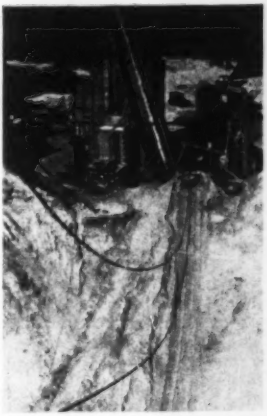

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FOREIGN

Tensioned cables will strengthen threatened Bombay water supply dam

Growing concern over the stability and safety of Tansa Dam whose reservoir supplies Bombay, India, with 100 million gallons of water a day has finally forced a decision on a plan to strengthen it. Using a scheme recommended by Andre Coyne, French consulting engineer, the dam will be tied to its foundations by a series of vertical steel cables stressed by jacks installed on the crest of the structure. The principle is that of prestressing—in this case more precisely described as post-tensioning.

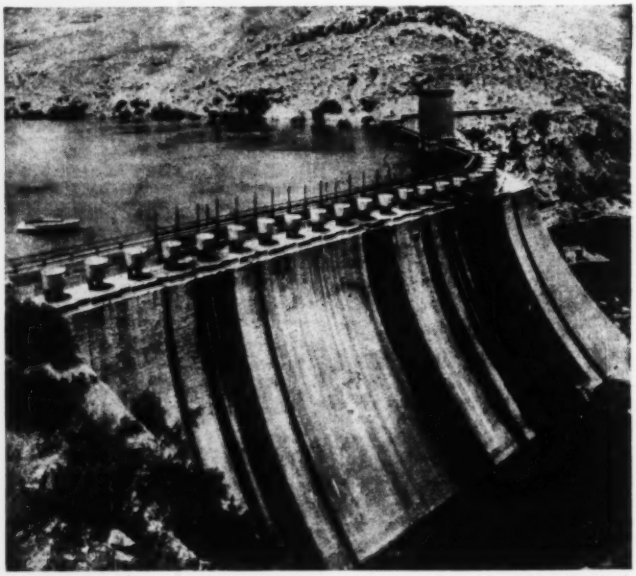
Because of design and preparatory operations in the field, actual strengthening cannot begin until December. In the meantime, another monsoon season has just begin, and the resulting filling of the reservoir is awaited with considerable apprehension.

The questionable safety of 56-year-old Tansa Dam was highlighted by statements of eminent foreign engineers who visited it at the time of the meetings of the Fourth International Congress on Large Dams in India in January. Mr. Coyne, president of the Congress, was asked to report on the dam by N. V. Modak, special engineer for the city. He warned that "the condition of the dam gives cause for anxiety." He compared the dam with Perregaux Dam in Algeria, which collapsed in 1937, and he noted "with astonishment that Tansa Dam had successfully withstood a more severe condition (higher flood levels) than that which had destroyed Perragaux."

Three other engineers – Georges Drouhin of Algeria, Henri Gicot of Switzerland and L. F. Harza of the U. S.–inspected the dam in February and March, and each reported that the dam depended only on chance for its stability. In Mr. Harza's opinion, "It is quite remarkable that the dam is standing (in places even on a downstream dipping foundation), as hardly less than a miracle".

That the condition of the dam has been known for some time is evident from a report made by Mr. Modak in 1933 in which he pointed out that the dam had been designed as a gravity masonry structure without any allowance for uplift, as was common in

(*Continued on page 56*)



Cheurfas Dam in Algeria demonstrates method to be used to strengthen Bombay's Tansa Dam—vertical cables grouted into the foundations and stressed by hydraulic jacks. The cylinders on top of the dam are concrete sockets on the end of each of the cables.

husky equipment...

The Model 4500 crane, built by Manitowoc Engineering Works, lifts a 4-5 yard drag bucket on a 140 foot boom, or 100-ton working loads at 20 foot radius.

This heavy work requires rugged, dependable component parts. That's why Torrington Spherical Roller Bearings are used on the main drive shaft and dragline countershaft assemblies, and Torrington Radial Roller Bearings on the front drum shaft.

Self-Aligning Spherical Roller Bearings prevent binding stresses by compensating for shaft deflections caused by shock loads. All Torrington Bearings are precision-made from specially selected steels, carefully heat-treated to assure high load capacity and long, reliable service.

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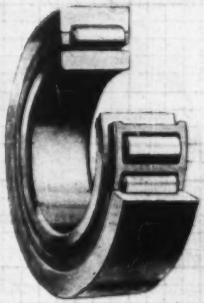

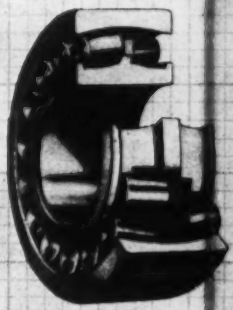

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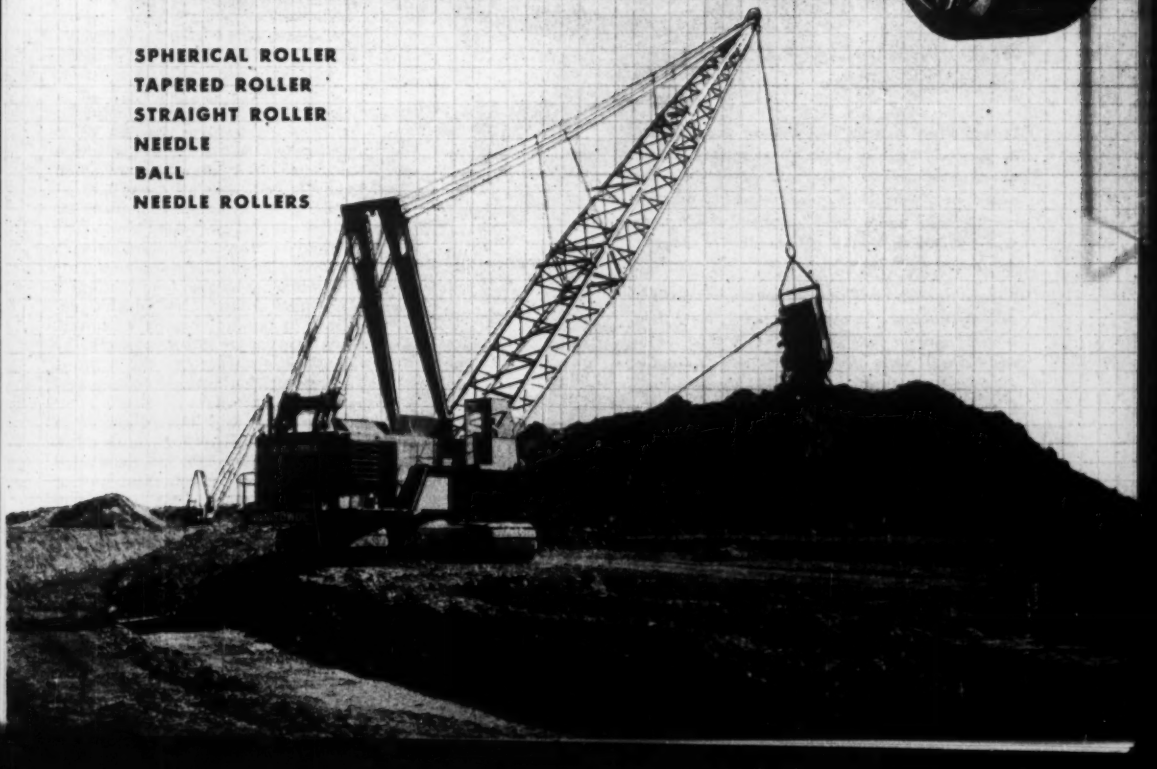

Aeroquip

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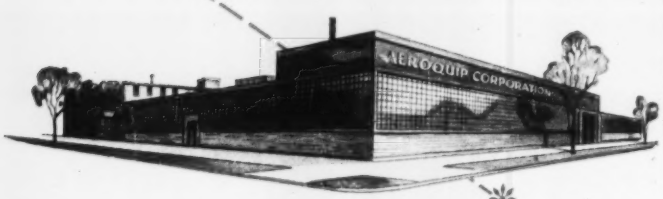
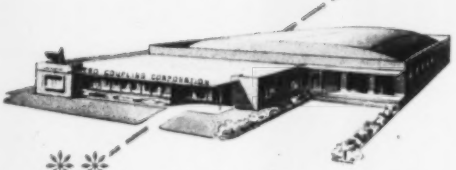


DIDN'T



WAIT!

Today, when military and civilian demands for its products have doubled all previous records, Aeroquip announces the *completion* of a sizable expansion program. Two new structures and the acquisition of a new subsidiary have added more than 100,000 sq. ft. of highly productive space to Aeroquip's plant facilities.

It is not through mere chance that these important new additions are in operation *today*. More than a year ago the first warning signs that led to rearmament were recognized. Then, Aeroquip didn't wait for government prodding or financing, but with private capital and typical American initiative began a project which assures greatly increased production of vital Aeroquip products TODAY . . . *when they are of utmost importance.*

In Jackson, Michigan, there is a new 65,000 sq. ft. addition to the Aeroquip main plant.

In Burbank, California, this modern 30,000 sq. ft. plant has just been completed.

Metalco, Inc., a new Aeroquip subsidiary, operates this plant in Cheboygan, Michigan.

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Foreign . . . . .

TANSA DAM, which holds Bombay's water supply, is in dangerous condition. Built 56 years ago, it was not designed to resist uplift forces.

those days. Also as a result of the report, the Francois Cementation Co. made exploratory borings in 1936 and reported that both uplift and sliding forces were present in dangerous amounts. A grout curtain was installed to cut off leakage.

Mr. Gicot in his report suggested that buttresses be installed on the downstream face of the dam to strengthen it, but the Coyne method of post-tensioned cables was favored on the ground of cheapness and speed.

The most important precedent for the work exists in Cheurfas Dam in Algeria which Mr. Coyne strengthened in 1935. A masonry structure 95 ft high resting on a concrete foundation extending 35 ft into the foundation soil, the dam was tied down with 37 cables 6 in. in diam, each made up of 630 parallel galvanized wires. The bottom of the cables terminate in heavy babbitted points, and on the top the wires are splayed out to form a "bouquet" 6 ft in diam which is enclosed in concrete heavily reinforced. It is this cap or socket, protected by a cast steel plate on the bottom, against which the three 400-ton prestressing jacks react.

The cables were lowered into 10 in diam holes drilled through the dam and about 75 ft into the foundation rock. A tube through the center of the cables permitted the injection of cement grout, to anchor the cables into the foundation. Tensioning of a cable to a total load of about 1,000 tons required about a week.

The work on Tansa will be the largest operation of this type yet un-

dertaken since the height of the dam is 150 ft compared to 130 ft for Cheurfas. It is expected to cost about $2 million.

Bombay is currently building a new dam above Tansa on the Vaitarna River. When this dam is completed in about 3 years its waters will also flow into Tansa Lake, before being transported on to the city, so that a strengthened and safe Tansa Dam will be more than ever a necessity. When the entire project is completed Bombay's water supply will be more than doubled, also a necessity since the city's population has increased to 3½ million from the 1¼ million that it had just prior to the war.

Congo uranium is object of $15.5 million ECA loan

In granting a $15.5 million loan to Belgium to speed up the development of that country's African territory in the Congo, ECA had the needs of the Atomic Energy Commission for new sources of uranium clearly in mind. Large deposits of ores of that metal as well as of other useful and critical materials are known to exist in that undeveloped country. The loan was negotiated through the Export-Import Bank, and is to run for 25 years at an interest rate of 3¼%.

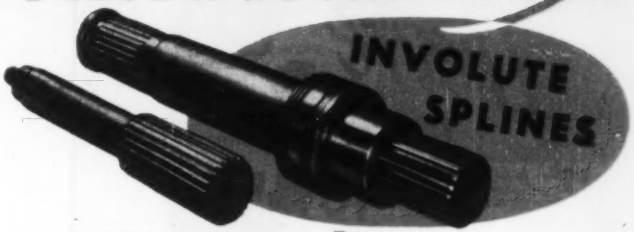
The money will be used principally for highways, waterways and hydropower facilities. The work is part of a ten-year plan that Belgium has undertaken to increase the production of the Congo's strategic materials. The total cost is estimated in the neighborhood of $160 million, to be met principally by the Belgium government and private interests already operating in the territory. Any quick increase in production by these interests is dependent on improved public services, principally transport and power—hence the ECA loan.

That the Congo has the hydro power potentialities for vast development was highlighted two years ago in a report by E. J. Devroey, honorary chief engineer of the colony and for many years head of its public works department. Pulling together all of the available figures on world hydro power potentials and incorporating his own estimates for the Congo, Mr. Devroey concludes that Africa as a whole accounts for 26.6% of the world total with the Congo contributing at least half of the African potential.

Stated in another way, the potential hydro power in the Belgian Congo is on the order of 103 million kw. By comparison the U. S. potential is 82 million kw. Also by comparison the

(Continued on page 59)

1 of 10 Reasons Why UNIT is a Better Machine



...FOR GREATER STRENGTH AND PEAK EFFICIENCY

A vital link in the strength, toughness, and durability of UNIT equipment is the use of involute-splined shafts. Compare the 3 shaft drawings and note the superiority of involute splining. In the outmoded, single-keyway shaft, the driving force is concentrated at one point, making it the least efficient and subject to easy breakage or wear. The 10-spline shaft, commonly used in the industry, is a great improvement over the single-keyway — but is still not the most efficient! Involute splining is better able to take the severe beating of daily use. Its multiple splines allow a greater area of contact with the mating member, providing a more equal distribution of driving force under load. As a result, wear is reduced and replacement is seldom necessary. Involute splining requires less tooth-depth, eliminates sharp corners, thus making possible a shaft of greater diameter and strength. Only the advance design of involute splining gives full, peak efficiency — the reason it is used in every UNIT machine.

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UNIT 614
½ Yard
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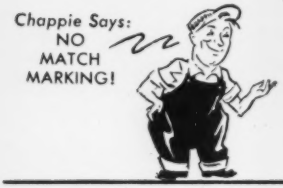
TO REDUCE YOUR COSTS

CHAPMAN *Standardized* SLUICE GATES

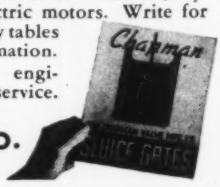


Use Chapman *standardized* Sluice Gates and you'll find installation is easier — maintenance is easier — costs lower.

Why? Well consider the stems and couplings — they're completely interchangeable so that match marking is never necessary. And all the other parts are as carefully made. As a result repair and replacement parts drop easily into place — never require field alteration.

Chapman Sluice Gates can be obtained with any type of operating control — manual, hydraulic, cylinder or electric motors. Write for Bulletin No. 25 for handy tables and more detailed information.

For special jobs, our engineering staff is at your service.



THE CHAPMAN VALVE MFG. CO.

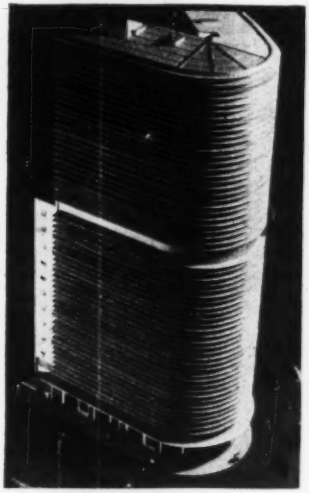
INDIAN ORCHARD, MASSACHUSETTS

Foreign . . .

U. S. has developed about 20% of its potential whereas only 0.1% has been developed in the Belgian Congo. Yet when and if the Congo River is harnessed by hydro plants it will stand near the top of firm power producers of the world because of its small ratio (1:3) of minimum to maximum discharge. U. S. rivers of comparable size, the Mississippi and the Columbia, have ratios of 1:21 and 1:33.

• **Big help to France**—France has been granted $28,000,000 in Marshall Plan funds to import consumer and capital goods needed for the economic development of its overseas territories —including Algeria, Morocco and French West Africa.

• **Pakistan's 2-year plan**—Pakistan has launched a development plan to make the country self-sufficient in urgently needed manufactured goods within two years. The plan envisages a 15-vessel steamship company, textile, steel and cement factories, and the manufacture of drugs, medicines, paper, leather goods, tires, and shoes.



BRAZILIAN STYLE—Striking treatment of sun protection elements features this residential building, "Edificio Montreal," to be built on downtown Avenue Iprianga, Sao Paulo, Brazil. The 22-story building will have a foundation area of 600 sq meters. The horizontal sun shades will dip slightly as they round the curved section of the building. To break the structure into two components, the 12th story will be without sunshades. Architect is Oscar Niemeyer, and the builder Cia. Construtura Harding SA for the Banco Nacional Imobiliario.

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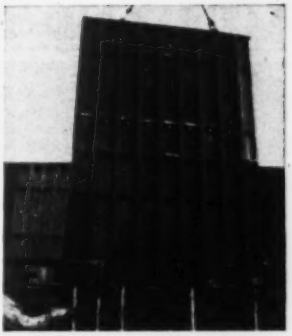

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Power failure can start a lot of trouble for theater operators, hospitals, institutions, churches, schools, police, fire and other municipal departments. Injuries, loss of life, and property damage can lead to costly lawsuits.

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a name worth remembering

MEN AND JOBS

BACKDROP: Winston-Salem's New Filter Plant—Inspecting their handiwork are, left to right: Francis S. Friel of Albright & Friel Inc., consulting engineers, Philadelphia; John D. Spinks, consulting engineer, Winston-Salem; Stanley Harris, superintendent of water and sewage, Winston-Salem; H. A. Thomas, director of public works, Winston-Salem; V. B. Higgins, contractor, Greensboro, N. C.; and R. J. Patterson, superintendent for Mr. Higgins. The project, almost completed, includes a new water filtration plant and pumping station on the Yadkin River and some 14 miles of pipeline. It is costing Winston-Salem about $4,000,000.

New Appointments

Highway departments

B. P. Burtner, resident engineer, Lamar County, Texas highways.

G. H. Brittle, now chief highway engineer, Oklahoma.

John E. Williams, senior engineering aide, Alabama highways.

G. A. Learn, dist. construction engineer Montana highways, Lewistown.

H. D. Jones, appointed director Highway Safety div. of North Carolina Motor Vehicles Dept.

Government agencies

Wm. B. Cobb, Jr., now in Goldsboro, N. C., dist. office of the U. S. Soil Conservation Service.

Ralph Smillie is now a consultant to the chief engineer and the engineering dept. of the Port of N. Y. Authority in the design of the $85,000,000 third tube of the Lincoln Tunnel.

Prof. H. G. Baity of the University of North Carolina, named sanitary engineering adviser to the European regional office of the World Health Organization at Geneva, Switzerland.

Dale C. Cameron appointed chief of the cooperative health services branch of the Div. of Industrial Hygienec, U. S. Public Health Service.

Leslie F. Zsuffa, former director of public relations, Georgia Tech., has been recalled to the Army as a lieutenant colonel to assist in the design and construction of an $11,000,000 Quartermaster Research and Development Laboratory at Natick, Mass.

Stephen P. Curtis, left, chief construction engineer, and J. Donald Rollins, project manager, of U. S. Steel's Fairless Works now under construction on a 3,800-acre site near Morrisville, Pa., just across the Delaware River from Trenton, N. J. The plant will have an annual ingot capacity of 1,800,000 tons, and is named in honor of U. S. Steel's president, Benjamin Franklin Fairless. This will be the largest single project in U. S. Steel's present program to expand steel capacity.

Corps of Engineers

Meredith Broyles appointed chief of the construction division, Kansas City District.

J. W. Sibert, Jr., special technical assistant to Lt. Col. R. J. B. Page, Garrison Dist. engineer, N. D.

Ernest E. Stansbery, resident engineer of the newly-established field office at the Bryan A F B, Tex.

State, city and county

Ward H. Andrews, now city engineer, Wilmington, N. C.

William M. Spencer, chairman of the North American Car Corp., has been appointed chairman of the Chicago Plan Commission.

C. A. Peterson, now director of works, Pinellas County, Fla.

W. R. Carlisle, city engineer, Fort Scott, Kan.

Everett Enns, city engineer, Willmar, Minn.

Harry F. McQuade will be resident engineer for Delaware County, N. Y. State Dept. of Public Works.

John Mamott, now assistant civil engineer for N. Y. State Dept. of Public Works at Utica.

E. W. Downward, city engineer, International Falls, Minn.

Retirements

L. D. McDonald, chief of the construction division, Corps of Engineers, Kansas City, Mo., after 18 years.

Bruce Conner has retired from the bridge department of the North Carolina highways.

Christopher E. Webb, dist. engineer for the British Columbia and Yukon Dist. of the Water Resources Branch, Canadian Dept. of Resources and Development, has retired after 38 years with the government.

Matthew J. Chryst, general supervisor of building construction, office of N. Y. State Architect, after 41 years.

Resignations

F. L. Stephenson, resident engineer, Texas highways, Lamar County, to enter private business.

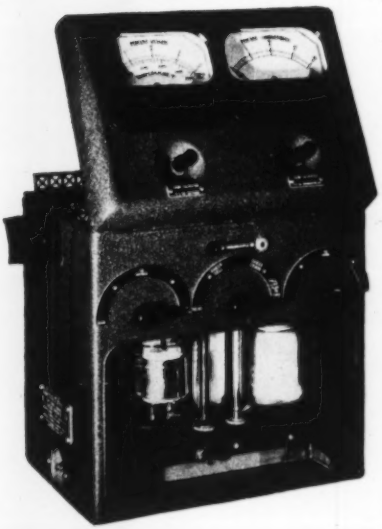
Chas. E. Clark, Jr., resident engineer, N. C. highways, to become resident engineer for Wright Contracting Co. on Buggs Island project.

P. D. Carlson, Morrison County engineer, Minnesota highways.

M. J. Keranan, city engineer, Bemidji, Minn., to become a construction engineer for the Department of the Interior at Juneau, Alaska.

(*Continued on page 62*)

Mobilizing BTU's



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You'll readily be able to calculate any oxygen excess, waste combustible matter, and potential fuel savings. The results are like an accurate "diagram" of corrective measures needed to conserve heat units for consistently higher production at lower cost.

You'll see profit in applying the Cities Service Heat Prover . . . *not an instrument you buy, but a service we supply!* Call or write your local Cities Service office about arrangements. Or simply return the coupon today.

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Although you may not operate an M & H Valve for a long period of time, your valve always opens or closes with ease. No sticking, no binding, no hard work. M & H Valves are dependable. In closing, the gates easily descend to a position opposite their seats. Then the spreader makes a firm bronze-to-bronze seal. In opening, the spreader releases the seal so the gates may rise freely out of the waterway.

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Men and Jobs . . .

Oliver H. Folsom, resident engineer for the Bureau of Reclamation supervising the engineering and construction activity on the Delta-Mendota Canal, Calif., and W. J. Darkenwald, project manager for Morrison-Knudsen Construction Co. and M. H. Hasler, watch intently as excavation nears completion on the final 8-mile section of the principal CVP water-transfer canal to be concrete-lined. The huge dragline in the background has just completed excavation for the portion of the canal between Dos Palos and Ora Loma at the point where the "man-made river" changes from concrete- to earth-lined.

M. B. Boyden, city engineer, Moorhead, Minn., to be divisional superintendent of utilities for North Atlantic Constructors.

Honors

Harry C. Murphy, president of the Burlington Lines, has just received the honoary degree of Doctor of Engineering from Iowa State College.

Roger H. Burnet of St. Louis has won the American Society of Military

TURNPIKE ENGINEERS — Stanton Funk, construction engineer for the New Jersey Turnpike Authority, and Nomer Gray, resident engineer for consultants Ammann & Whitney, made an extra-curricular inspection of progress during a recent field trip of ASCE's Metropolitan Section, Junior Branch. In background is approach to Goethals Bridge over Arthur Kill, under which the Turnpike will pass.

GETS AWARD—Carl A. Menzel, left, receives the 1951 Award of the Concrete Reinforcing Steel Institute from Henry C. Turner, Jr., President of the Turner Construction Co., and chairman of the Award Committee.

Engineers' gold medal as the outstanding 1951 engineering student in the Naval ROTC, University of Missouri.

Irvin L. Stumpf, Fort Morgan, Colo., Bureau of Reclamation, received a Certificate of Merit and a cash award for his suggestion for a new type of surveyor's chain.

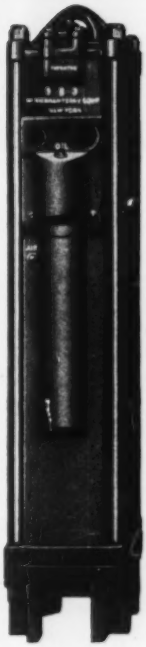
Ned Hensel Sayford received an honorary membership in the American Congress on Surveying and Mapping for his work as chief of the TVA's Maps and Surveys Branch.

Awards for 40 years' service have been made by the U. S. Engineers, Little Rock, Ark., district to **Fred P. Kealer** and **Harrison V. Pittman.**

Philip M. Morgan, president of Morgan Construction Co., Worcester, Mass., has received an honorary Doctor of Engineering from Worcester Polytechnic Institute.

D. C. ENGINEER COMMISSIONER—Col. Bernard L. Robinson, district engineer, Atlanta, Ga., of South Atlantic Division, U. S. Corps of Engineers, since 1949, has been named engineer-commissioner for the District of Columbia.

How One **McKIERNAN-TERRY HAMMER** *Sold Two More*



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COAL TOWERS

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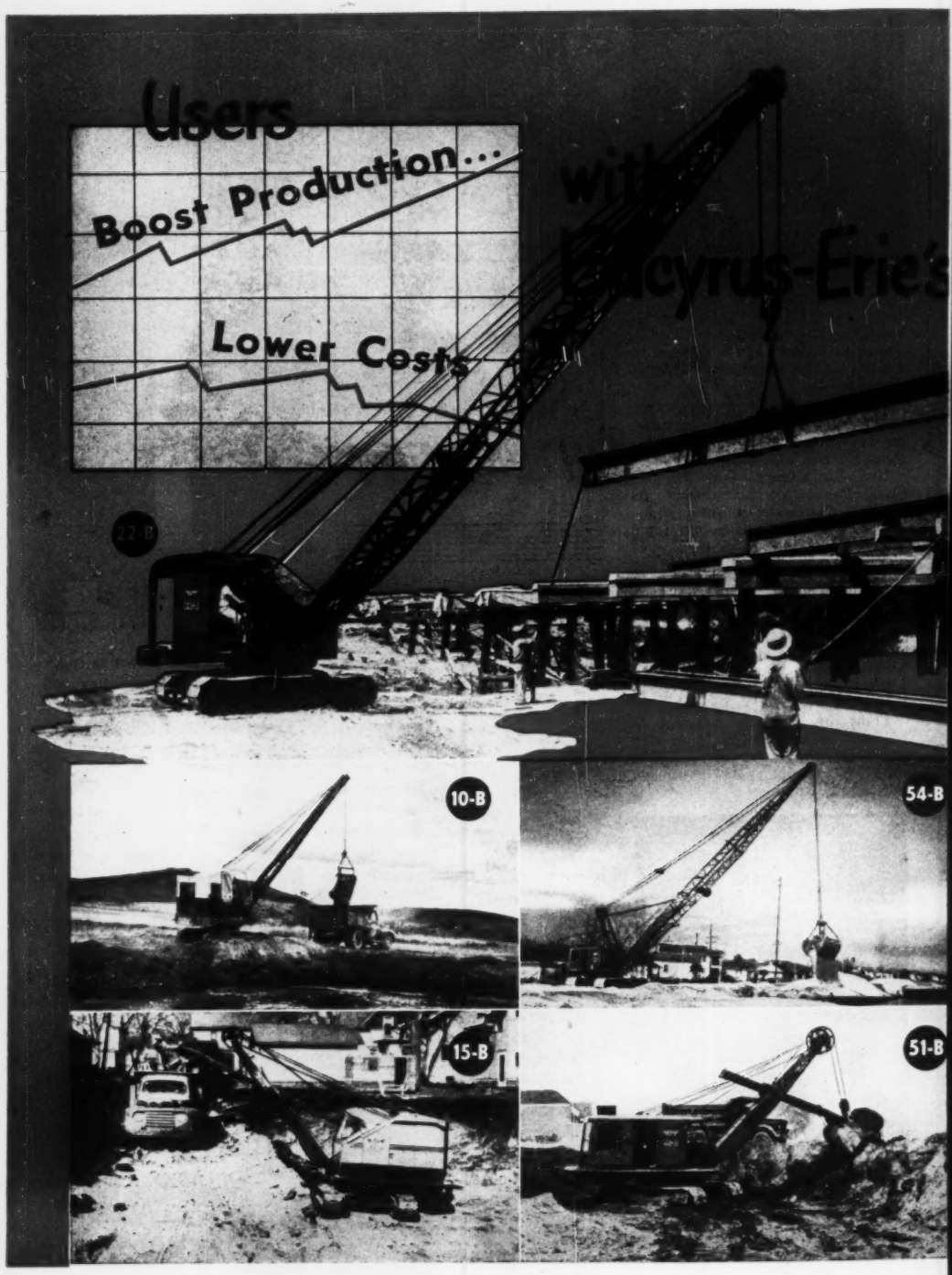
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Boost Production...
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22-B
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15-B
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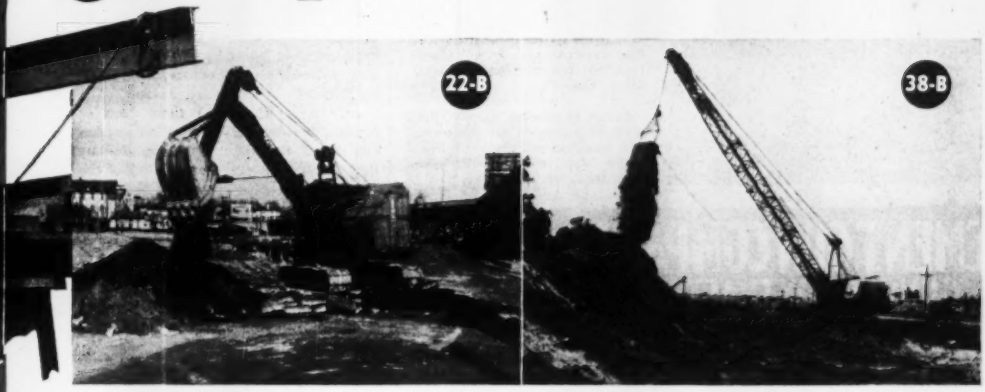

Helping contractors get new speed, efficiency and economy in their operations is an old story to Bucyrus-Erie excavators. They've done it on a thousand-and-one different jobs — as shovels, cranes, draglines, clamshells and dragshovels.

It's easy to match job requirements exactly with one of the machines in Bucyrus-Erie's ⅜- to 4-yard line of gasoline, diesel, or single motor electric excavators. Each model has size and strength to handle its rated capacity regularly. This means less "time out" for expensive maintenance, more time on the job, building profits.

There's strength behind this top-notch line, too . . . your Bucyrus-Erie distributor. He's staffed and equipped to give you the service you need, when and where you want it.

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South Milwaukee, Wisconsin

CEMENT GUN COMPANY MAKES POOL "BETTER THAN EVER" WITH GUNITE

Top photograph shows marked disintegration and almost complete failure of a large Municipal Swimming Pool located in a Virginia city.

This picture was taken after Cement Gun Company crews had begun restoration with "Gunite". Reinforcing mesh is in place on the floor and chipping and scaling operations are taking place on the sidewalks.

Lower photograph shows the complete "Gunite" job before water was put back in the pool. This job is typical of what Cement Gun Company can do with disintegrated concrete and masonry using "Gunite".

Scores of similar "Gunite" jobs we have performed are illustrated and described in Bulletin (A)2400. Write today, on your letterhead, for a free copy.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

Use HENDRICK ARMORGRIDS

where traffic is HEAVY
For floors, loading platforms, ramps, driveways . . . No traffic punishment is too tough for Hendrick Mitco Armorgrids . . . Completely fabricated units, they require no bolts, rivets, or assembly work . . . Easy and economical to install . . . May be used with fill of concrete, cement, asphalt, or composition material . . . Do not depend on the fill for development of full strength to resist shock loads . . . Never require rebuilding . . . Write for copy of Hendrick Mitco Products booklet.

1876—Seventy-Fifth Anniversary—1951

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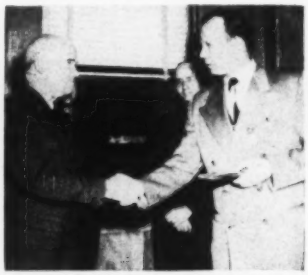
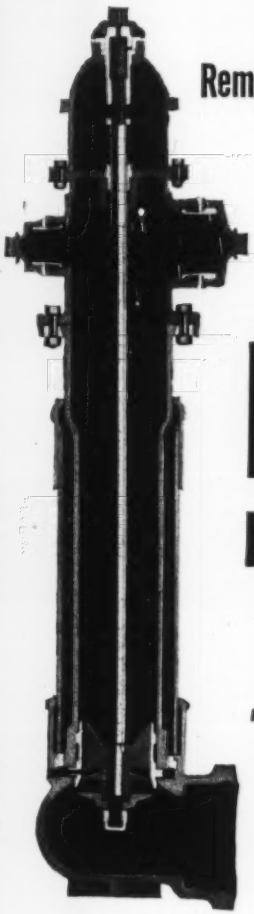
Men and jobs . . .



RECEIVES MEDAL—In recognition for his work in directing the construction of Portage and Bear Valley railway tunnels in Alaska a Department of Defense medal is presented to Olavi V. Kukkola by Maj. Gen. Julian W. Cunningham, Commanding General, U. S. Army, Alaska. The tunnels, completed after three years of construction by the West Construction Co. of Seattle, Wash., link the military Port of Whittier with the main line of the Alaska Railroad. The commendation lauds Mr. Kukkola's efforts in three years hazardous construction. He is a graduate of the University of Alaska, was born in Juneau, and has been employed with the Corps of Engineers since 1940. At present he is chief of the Buildings and Grounds Unit, District Engineer, U. S. Army, Alaska.

NEW PARTNER—Carl H. Wittenberg has been made a partner and general manager of the general contracting firm of Ford J. Twaits Co., Los Angeles. The company at present is engaged in the construction of the 2,000-car, underground garage in Pershing Square in that city. Wittenberg is a civil engineer, educated at Rensselaer Polytechnic Institute and at the University of Edinburgh. He was previously with Twaits between 1920 and 1930. For ten years, he was with Columbia Steel Co. as division manager. Lately he was executive vice-president of Gladding, McBean & Co.



Removable barrel contains all working parts

This exclusive Mathews feature is of utmost importance to a smoothly functioning system. It permits a hydrant broken in a traffic accident to be removed and a spare put in its place. These two operations can be done *without excavating* and with only a few minutes' loss of neighborhood fire protection.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square
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Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Mathews Modernized Hydrants offer these advantages

Easily maintained because simple in construction • Stuffing box cast integral with nozzle section • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • Operating thread only part to be lubricated • Available with mechanical joint pipe connections • A modern barrel makes an old Mathews good as new

EDUCATION, RESEARCH

FOR B. S. DEGREE IN CONSTRUCTION—At the school of engineering, North Carolina State College, there has been instituted a 4-year course in construction that leads to a Bachelor of Science degree in that subject. Head of the construction program is Henry E. Griset, an associate professor of civil engineering. One of his classes is shown above. The curriculum is designed to give students a fundamental background in engineering and in studies in the humanities, with special training in problems of structures, labor, management, organization, and finance peculiar to the industry. Emphasis is on production or erection of structures, rather than on design.

E.J.C. report reveals graduates' defense status

A report on the "Defense Status of Engineering Graduates in 1951" has been issued by Maynard M. Boring, chairman of the Statistical Committee of the Engineering Manpower Commission of Engineers Joint Council.

It says that industry will be able to count on only about 19,000 engineering graduates this year—about half the total graduates—whereas the need is at least 30,000 per year.

The demands for engineering graduates by the military and industry for defense have been stepped up. Reports from 86 colleges indicate these percentages regarding the new graduates:

To be commissioned in armed services or reserves through R.O.T.C. training	11%
Enlisted members of Reserves or National Guard	16%
Will become draft eligibles after graduation	36%
Total available for the armed services	63%

The shortage of engineers will be made even more acute by losses of experienced engineers to the armed services. A previous survey this year showed that 25% of the engineers employed in industry were enrolled in the Reserves.

• **Shortage boosts salaries**—Other opinions on the engineer shortage follow:

Lee A. DuBridge, president of the California Institute of Technology: "Many scientific and engineering enterprises critical to national welfare and security are tragically understaffed."

Lorin G. Miller, dean of engineering, Michigan State College, reports that the shortage has jumped starting salaries 15 to 20%. Men with bachelor's degrees are to get $300 to $350 per month, those with master's degrees, $325 to $450.

Herbert P. Catlin, placement officer Rensselaer Polytechnic Institute: "If you can spell 'engineer' you can get a job today." He says members of this year's R.P.I. graduating class are averaging six or eight job offers.

Illinois Institute of Technology—Most recent graduates are taking positions at an average salary of $307 monthly.

James R. Killian, Jr., president of M.I.T.: "The shortage came about partly because of the unfortunate estimates given national distribution by the Bureau of Labor Statistics several years ago. Those estimates at that time indicated that the country was faced with a surplus of engineers and the report had an obvious effect on the number of young men going into engineering schools."

Prestressed concrete program announced by M.I.T.

A tentative program naming about 35 engineers and architects who will speak at the first U.S. conference on prestressed concrete has been announced by Prof. M. J. Holley, Jr., associate professor of civil engineering at the Massachusetts Institute of Technology. The meeting will open at M.I.T. on Tuesday, Aug. 14, and continue through Aug. 16.

Co-sponsors are American Concrete Institute, American Society of Civil Engineers, American Institute of Architects, American Railway Engineering Association, the Associated General Contractors of America, and the Portland Cement Association.

A few of the papers are:

"Why Prestressed Concrete?" L. H. Corning, Mgr., Structural and Railways Bureau of the Portland Cement Assn. Discussion by F. S. Merritt, Associate Editor ENGINEERING NEWS-RECORD.

"Bridges", European experience. C. C. Zollman, chief design engineer, Prestressed Concrete Assn., Kansas City, Mo. U. S. experience, S. S. Baxter, acting chief engineer, Bureau of Engineering Surveys and Zoning, Philadelphia.

"Buildings", J. K. Garnett, vice-president and director of engineering, The Austin Co.

"Pavements," L. Coff, consulting engineer, New York City.

"Piles," A. E. Cummings, director of Research, Raymond Concrete Pipe Co.

"Design," M. Fornerod, chief engineer, Preload Enterprises, New York City. "Research," C. P. Siess, Department of Civil Engineering, University of Illinois.

Faculty news

R. G. Sturm, professor of engineering mechanics at Purdue University, has become director of the Auburn Research Foundation and the Engineering Experiment Station at Alabama Polytechnic Institute.

Gilbert L. Kelso is now associate professor of sanitary engineering at the University of North Carolina school of public health.

C. D. Williams, professor of civil engineering at the University of Florida, will present a paper before the 4th World Congress on bridge and structural engineering next year.

Bernard Smith has been promoted from assistant to associate professor of civil engineering at Lafayette College. He had a distinguished career in the Corps of Engineers, which included foreign service in both world wars.

Dean Ivan C. Crawford of the college of engineering, University of Michigan will join the engineering faculty of the University of Denver this summer. He had previously been dean of engineering at Idaho and Kansas.

(*Continued on page 71*)

A tough concrete job where *only* TIMKEN® bearings have given trouble-free service

WYZENBEEK & STAFF, INC. *mounts two double row Timken tapered roller bearings on the shaft of the Wyco Concrete Vibrator head (shown above) for long, dependable operation.*

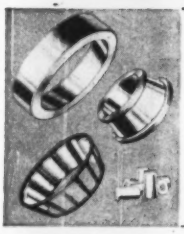
WYZENBEEK & STAFF, INC. have found that only Timken® tapered roller bearings hold up in the vibrator heads of their Wyco Concrete Vibrators. Other bearings could not handle the gyratory motion involved in settling stiff mixtures of concrete and the frequent hammering against reinforcing bars. But Timken bearings easily take the heavy loads and keep vibrators operating at about 8,000 R.P.M.

With Timken bearings you're assured of long life and trouble-free performance with minimum time-out for maintenance. They have extra load-carrying capacity because of line contact between rollers and races. Their tapered construction enables them to take both radial and thrust loads in any combination. And because of the true rolling motion and incredibly smooth surface finish of Timken bearings, friction is practically eliminated.

Timken bearings hold shafts in proper alignment; wear on moving parts is reduced. Timken bearings are engineered for the job, precision manufactured, and made of Timken alloy steel—the finest steel ever developed for tapered roller bearings. They'll normally last the life of your machine.

No other bearing gives you *all* the advantages you get with Timken tapered roller bearings. Whether you build or buy, always insist on Timken bearings for your equipment. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



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The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roll ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

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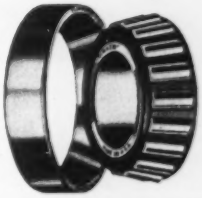
TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

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SCHOOL DISTRICT BUDGET LIMITED. CAN SAVE WITH DRAVO HEATERS.

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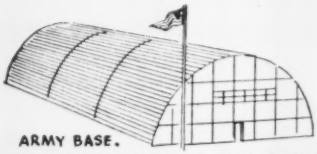
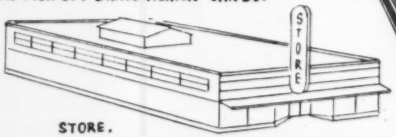
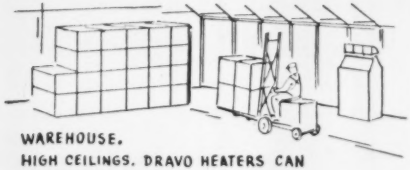
INDUSTRIAL PLANT. DRAVO HEATERS HAVE 150' AIR THROW. NO DUCTS NEEDED.



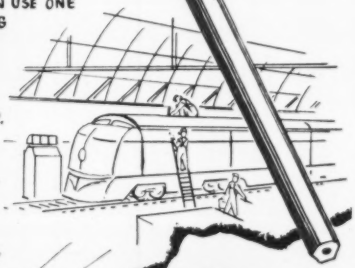
ARMY BASE.
WINTER CONSTRUCTION ON THESE BARRACKS. CAN INSTALL DRAVO HEATERS EARLY FOR HEAT DURING CONSTRUCTION AND AFTER COMPLETION.



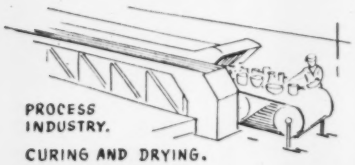
STORE.
WITH DRAVO HEATERS, CAN USE ONE SET OF DUCTS FOR HEATING AND AIR-CONDITIONING.



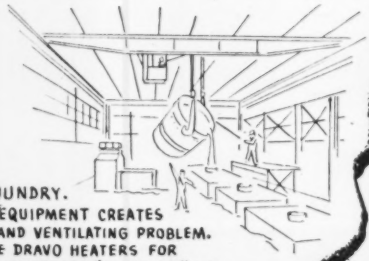
WAREHOUSE.
HIGH CEILINGS. DRAVO HEATERS CAN REDUCE ROOF HEAT LOSS, KEEP HEAT WHERE IT'S NEEDED.



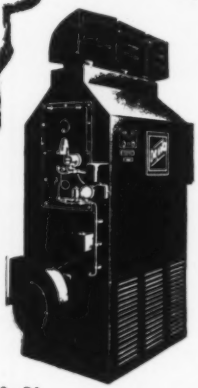
DIESEL RAILROAD SHOP. NEEDS HEAT AT WORKING LEVEL. DRAVO HEATERS IDEAL.



PROCESS INDUSTRY.
CURING AND DRYING. SPECIFY DRAVO HERE.



FOUNDRY.
EXHAUST EQUIPMENT CREATES HEATING AND VENTILATING PROBLEM. USE DRAVO HEATERS FOR TEMPERED "MAKE-UP" AIR.



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...w Dravo.

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Education Research

Karl R. Kinnison is lecturer in civil and sanitary engineering at M.I.T. this spring.

Geo. H. Lee will join the faculty of Rensselaer Polytechnic Institute, July 1 as professor of mechanics.

John Hoogstraten has been appointed professor of civil engineering and Arthur J. Carlson, associate professor at the University of Manitoba.

Frank C. Foley, Sept. 1 will become professor of geology and head of ground water geology and geophysical explorations at the University of Illinois.

New research review

A new monthly bulletin called "N. Y. U. Engineering Research Review" has been started by the Research Division of the college of engineering of New York University. Director Harold K. Work says that its purpose is to keep the division's friends, sponsors, colleagues and other interested members of the scientific, technical, and industrial public informed of the nature and scope of its research and the results.

For a broader foundation—Nine liberal arts colleges have now entered the cooperative plan with Rensselaer Polytechnic Institute to offer a broader educational foundation for engineers and scientists, affording a 3-year base of general study for two years of concentration in the engineering field. They are: Trinity College, Franklin and Marshall College, St. Lawrence University, Washington and Lee University, Kenyon College, Denison University, Ohio Wesleyan, Allegheny College, and Grinnell College.

• **For Army personnel**—Inaugurating its largest training program for Army personnel since World War II, the service department of Caterpillar Tractor Co. will conduct three schools for the Corps of Engineers. About 90 men, selected on a basis of their experience, will attend the program, which includes two weeks on diesel engines, three weeks on transmissions, and a week on the rehabilitation of parts. The schools have been established under a contract with the U. S. Corps of Engineers. Under a similar contract, Caterpillar trained 120 engineers between 1942 and 1944.

(Continued on page 72)

Faster Concrete Floor Finishing . . .
This FINISHER
Is WISCONSIN-Powered!

Faster finishing of concrete floors means more profit in every contract . . . assured by this Wisconsin-powered Whiteman Floor Finisher, built by Whiteman Mfg. Co., Los Angeles, California.

Like so many construction equipment manufacturers, this builder specifies Wisconsin Engines because their heavy-duty dependability matches the reputation of his equipment. An easily-serviced, OUTSIDE magneto, with impulse coupling for fast starts and steady going, and tapered roller bearings at both ends of the crankshaft, absorbing all thrusts, contribute to this stand out dependability. Equally important, is the feature of air-cooling, eliminating all cooling problems. You "shut down" a Wisconsin Engine for fueling and minor servicing only . . . an important factor in putting *more profit in every contract.*

Write for details. 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 30 hp.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
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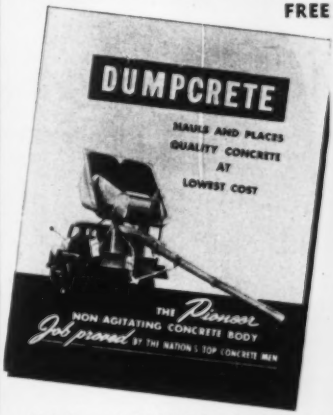

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TAC does what no other tool can do!
AT LAST! AN OPEN-END RATCHET WRENCH — the world's first true universal wrench. A patented design for connections on tubing, rods, piping, conduit, studs, etc. Sixty-four socket sizes from 3/8" to 4". Smallest effective ratcheting arc yet—5° to 7½°. TAC will also do every job any ordinary ratchet wrench will do: one TAC set replaces literally dozens of single-purpose hand tools.
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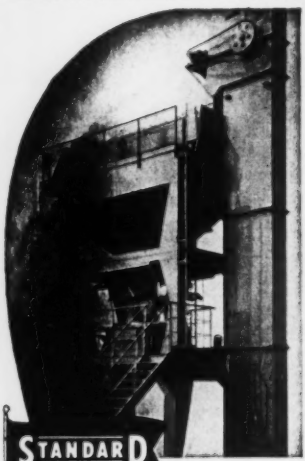

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The most rugged plants in America and the cheapest to own and operate. Less maintenance. Simplest design. Seven sizes. Unit built. Prompt delivery.

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Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

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Diamond and Shot Core Borings
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Education, Research

Millions for research—University of Michigan Engineering Research Institute at Ann Arbor will use $3,500,000 this year for government and industrial research projects. Most of it will be for contract studies for the armed forces. Important among these is a study of the upper stratosphere through the use of rockets, ram jet aircraft engines and development of the 300,000,000-volt synchroton for atomic research.

N. J. municipal administration—First contribution towards Stevens Institute's program to improve municipal administration in New Jersey is $1,000 from the Aluminum Company of America, which has a large plant at Edgewater, N. J. Alcoa will give $4,000 more later.

Home design contest—Harvard men won more than half the prizes awarded in a recent national home design contest. They were either students or recent graduates of the School of Design at the university. The contest was sponsored by the National Home Builders Association and "Architectural Forum."

Comparisons are odious—The "Old-New House" is the novel creation of two graduate students at Rensselaer Polytechnic Institute who have put seven antiquated rooms directly up against seven others, equal in size, but completely remodeled in the most popular materials and styles of today. The 76 by 30-ft, one-story structure not only affords the double quota of living rooms, dining rooms, bed-rooms, kitchens and baths, it has a dark cellar adjoining a bright playroom, an expansion attic next to an extra bedroom, an old porch beside a flagged terrace. Inside and out, the old and drab are beside the new and attractive. The designers are Frank J. Matzke and Daniel Klinger.

• **Electrical blasting dangers**—Research for the reduction of hazards in the use of electrical blasting equipment has been completed by the Engineers Research and Development Laboratories at Fort Belvoir, Va., under contract with the University of Maryland. It was found that the chief danger is extraneous electrical energy that may enter electric blasting circuits from the outside to cause premature firings—chief sources of danger are lightning, static electricity, and radio transmitters and transmission lines. Don't blast during a storm, and if possible stop transmission activity till blasting is over.

Choose ability to do more jobs faster, Choose an FWD 6x6 for oil field work

"That big FWD is sure a 'bear' for work — on or off the road. Power to spare — handles like a kitten under any load."

"I'm convinced an FWD 6x6 is tailor-made for our kind of job — heavy hauling, bulky awkward loads — tough cross-country traveling."

That's typical oil-man talk about FWD's. The reasons for it are simple. There's added traction and safety with 6x6 drive and balanced distribution of weight and power — specifically engineered for smooth and rough going on hard surface or soft bottom. They all add up to one thing — continuous outstanding performance over longer truck life. Get the complete FWD 6x6 story — 30,000 lbs. to 60,000 lbs. GVW — an oil-man's truck for oil-man's work.

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MEETINGS

Louis C. Bisso, director of city planning and zoning commissioner, has been elected president of the New Orleans chapter of the American Public Works Association. He succeeds James S. Janssen, New Orleans Public Service, Inc. Other officers, E. F. Hughes, assistant to general superintendent of sewerage and water board, vice-president, and Charles E. Cassagne, Jr., administrative engineer of the New Orleans railroad terminal board, secretary.

Ralph Simonette is the new president of the Niagara County Chapter of the New York State Society of Professional Engineers. Other new officers are: Deane O. Bubbord, vice-president; Raymond Newman, secretary; Elton L. Burmaster, treasurer, and Harold Huse, William Anderson, William Whitmore, directors.

Morris Cohn of Schenectady, N. Y., was elected chairman of the New England Interstate Water Pollution Control Commission at the annual meeting held in Chicopee, Mass. recently. Other officers are Philip Shutler of Vermont, vice-chairman, and Anthony Pimental of Chicopee, treasurer.

J. Wilson Setzer of Gastonia was elected president of the North Carolina Water Works Operators Association at the annual North Carolina Water Works Operators School at Raleigh. He succeeds S. E. Harris of Winston-Salem. Other officers elected are: Ralph T. Miller of Southern Pines, vice-president; and G. R. Reynolds of Leaksville, secretary-treasurer. W. S. McKimmon of Raleigh, who is connected with the State Board of Health, was re-elected to the board of examiners, and W. E. Long, Jr. of Fayetteville, was chosen to edit the association's year book for 1952. Some 75 water works operators attended the school, which was held at the N. C. State College School of Engineering, and was sponsored by the N. C. League of Municipalities, the North Carolina Section of the American Water Works Association, and the Sanitary Engineering Division of the State Board of Health.

Clarence H. Evans, of the E. I. du Pont de Nemours and Co., was elected president of the Delaware Society of Professional Engineers at the annual meeting at Wilmington, Del. Other officers elected were: Ernest S. Van Demark, senior vice president; Roy A. Garbett, vice president, and Martin J. Bergen, secretary. Andrew L. Bolton was relected treasurer. Col. William A. McWilliams, director of the Delaware State Highway Department's Delaware River Crossing Division, was named a director of the society of a three-year term.

At the annual meeting of the Halifax, N. S., branch of the Military Engineers' Association, Lieut. Col. R. J. Cassidy, was elected chairman, and Maj. G. K. Capewell, secretary-treasurer. The retiring officers were, Major C. S. Nicoll, and Lieut. R. V. Beck.

Samuel H. Hawkins, supervising engineer of Denver public schools, has been installed as president of the Professional Engineers of Colorado. Other new officers are: Hugh W. Hempel, president-elect; Howard A. Lane, vice-president; Thurman L. Rundlett, treasurer, and George C. Hahn, secretary. New directors are: Rhuel A. Anderson, E. M. Enright, Claude M. Hathaway and A. Warren Simonds.

The annual convention of the American Society of Civil Engineers will be held in the Statler Hotel in N. Y. City Oct. 22-26, instead of in January as heretofore. Division sessions, social activities and excursions will be held throughout the week instead of on three days only as formerly.

CALENDAR

National Constructors Association, Labor and Executive committees, Edgewater Beach Hotel, Chicago, Ill., July 11-12.

N. Y. State County Highway Superintendents Association, New Worden Hotel, Saratoga Springs, N. Y., July 18-20.

Bureau of Reclamation, annual programming conference, Wenatchee, Wash., July 23-27

National Conference on Prestressed Concrete, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 14-16.

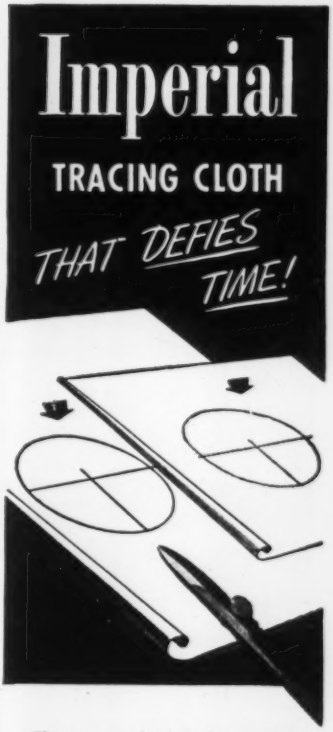
New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 10-12.

N. Y. section American Water Works Association, fall meeting, Whiteface Inn, Lake Placid, N. Y., Sept. 13-14.

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

Pennsylvania Section, American Water Works Association, Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 19-21.

9th International Road Congress, Permanent International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.



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Associate Architect—Claude H. Lindsay, Houston, Texas
Contractor—Tellepsen Construction Co., Houston, Texas

Case Study

The Lipton Tea manufacturing plant in Galveston, Texas, involved 200,000 square feet of contact surface form work, most of which was exposed. 32,000 square feet of GPX Plastic-faced Plywood was used to accomplish the forming job.

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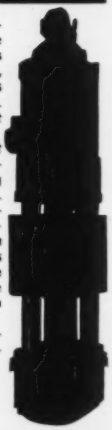

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OBITUARY

Walter Hiram McNeill, 62, engineering professor of the University of Texas until his retirement in May, died June 6 at Austin.

William L. Brayton, 83, died at Omaha, Neb., May 31. He was graduated in engineering in 1893 at Kansas State University. Later the University of Kansas confered upon him the degree of Civil Engineer. He held positions with railroads in Louisiana and Colorado; was structural draftsman in the office of J. A. L. Waddel, Kansas City; was in charge of shop drawings for the Williamsburg Bridge in New York City, and for other large structures, with the Pennsylvania Steel Co. and also was with the American Bridge Co. and seven years on railroad bridge designing. In 1910 became bridge engineer with the Union Pacific Railroad, and continued until his retirement.

Joseph L. Bridges, 67, former district engineer for the Chicago Park District, died June 13. He joined the District in 1936. He was in charge of all construction on Lake Shore Drive between Ohio and Byron streets. He retired in 1948 and recently had been employed by Ralph H. Burke, Chicago consulting engineer.

W. D. Robinson, 60, for the last 31 years an engineer for the Hennipin County, Minn., highway department, died in Minneapolis June 16.

Boyd Scott Brown, 38, of Denver, Colo. Bureau of Reclamation civil engineer, died June 8 in Managua, Nicaragua, where he had gone a few weeks ago with a Point 4 Reclamation Bureau mission to investigate water resources for that Central American republic. He was a graduate of the University of Colorado and had worked as a surveyor with the U. S. General Land Office in Denver, and for several construction companies before joining the bureau in 1939.

John L. Drake, 58, director of engineering for Libbey-Owens-Ford Glass Co., Toledo, Ohio, since 1944, and a pioneer in the development of mechanical production of window glass, died June 19.

Frederick Bay, 69, a Philadelphia city engineer for 37 years, died there June 19. He was a district engineer for the city highway bureau. A graduate of the University of Pennsylvania, one of his first jobs was on the Market St. subway.

C. Howard Peters, 90, a retired estimating engineer of the Phoenix Bridge Co., Phoenixville, Pa., died there June 19. He had been with the company for 62 years before he retired in 1945.

Hugh S. Robertson, 70, executive manager of Rockefeller Center, N. Y. city, from 1938 to 1948, died at Millerton, N, Y., June 23. He was one of the chief executives of the engineering firm of Todd, Robertson & Todd, which was responsible for the construction and planning of the $250,000,000 Rockefeller Center, comprising 12 acres in mid-Manhattan. At one time he was consultant to the N. Y. City Housing Authority.

Arthur J. Yaw, superintendent of highways for Erie County, N. Y. for the last 12 years, died June 22. In the department for 30 years, he was a past president of the New York County Highway Superintendents Association, and at one time was inspector of engineering works on N. Y. City tunnel construction.

G. Wayne Simmons, 56, a senior civil engineer of the Watertown, N. Y., district of the N. Y. State Department of Public Works, died June 20. He was with the department for 30 years, following graduation from Clarkson College of Technology.

Moving stairs for vertical transport in new office

The first New York City office building with a system of moving stairways as the principal means of vertical transportation (between basement and fifth floors) has been opened for occupancy.

The structure is the 11-story Dun & Bradstreet building, in downtown Manhattan. It is served by 12 moving stairways—largest number of such devices in any city office building. Two sets of moving stairs in the John Hancock Mutual Life Insurance Co. building in Boston carry passengers from the basement to the eighth floor (ENR Feb. 17, p.65); the United Nations Secretariat Building in New York has eight moving stairways extending from the basement lobby to the fourth floor (ENR Dec. 29, 1950, p. 21).

Upper floors of the Dun & Bradstreet Building are served by six passenger elevators.

Reinhard, Hofmeister & Walquist were architects; Syska and Hennessy, Inc., consulting engineers, and George A. Fuller Co., was general contractor. The 12 moving stairs were installed by the Westinghouse Elevator Division.

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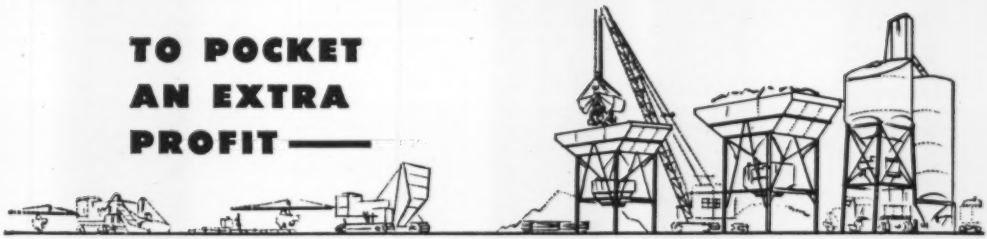

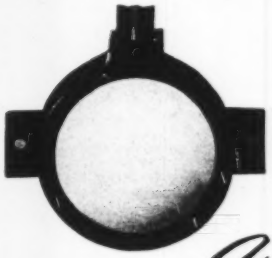

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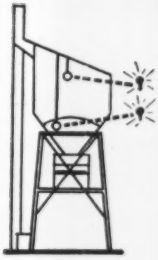

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Nothing else like it. So compact it takes only the space of a standing man. Yet, everything's there — compressor, tank, motor and all controls — all in one neat package. There's a dual pressure take-off so you can use air for other applications. Flat tires, for instance.

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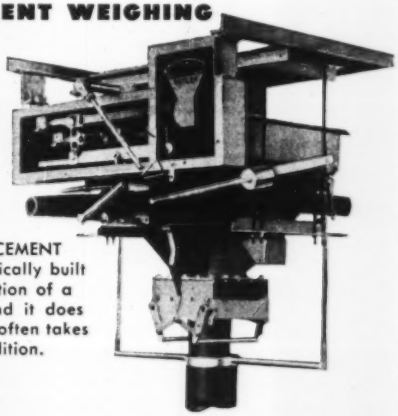

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Hartford's famous Charter Oak which flourished for 200 years before it fell in 1856

Hartford, Connecticut, has a cast iron gas main in service that was installed more than a century ago. On the anniversary of its 100th service year a section of this main was uncovered for inspection and found to be in excellent condition. This main, installed in the days of horse-drawn vans and vehicles, is now serving under the pavement of one of Hartford's principal thoroughfares and withstanding the traffic shock imposed by modern buses and multi-ton trucks. Despite such unforeseen stresses, cast iron water and gas mains, installed over a century ago, are still serving in the streets of more than 30 cities in the United States and Canada.

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LABOR

Congress holds key to wage policies

Wage and salary stabilizers last week awaited action by Congress on extension and revision of the Defense Production Act before coming to final decision on new wage policies under discussion.

At the Wage Stabilization Board, the members were mulling over Economic Stabilizer Eric Johnston's desire that any new wage formula be limited to about 13% above Jan. 15, 1950, including raises based on increased productivity and "fringe" increases. WSB's public and labor members reacted rather coldly to the proposal, leaving the possibility that Johnston may have to permit a higher ceiling to get labor cooperation.

Special procedures and policies were being considered by the Construction Industry Stabilization Commission, but they must be kept within the overall limits of WSB rules. In construction the big problem is what to do with deferred wage increases which pierce the ceiling (ENR June 7, p 77). They may be justified under either of two WSB principles.

• **Raise methods**—One is to permit above-ceiling wages where necessary for recruiting manpower for critical defense work. It is becoming clear that, without stiff manpower controls, the government is going to rely chiefly on wages as an incentive for building up and holding a work force.

The other is to justify the deferred increases to correct inequities in wages between workers in an area.

• **Executive salaries**—Like CISC, the new Salary Stabilization Board is working up special rules for executive salaries, also within WSB's general policies. SSB has jurisdiction over executive, administrative, engineering and other technical employees who are paid salaries and are not represented by a union. On the whole, SSB will specify what increases in salaries may be made without the necessity of prior approval from the government. Approval will be necessary only in unusual cases. Applications should be sent directly to Salary Stabilization Board, Federal Security Building South, Washington 25, D. C.

It is expected that individual salary increases above the 10% ceiling will be approved where the average for the executive group does not go above 10%. SSB is also concerned with what to do about stock option plans, stock purchases by employees, incentive bonuses and other problems peculiar to executive salary administration.

Wage Stabilization Board plans enforcement body

WSB is in the process of setting up a national enforcement commission of three men to crack down on violators of wage and salary controls. The law provides for civil and criminal penalties and for injunctions.

Civil penalties will be the chief weapon. WSB may prevail on other government agencies to disregard all or part of total wages paid illegally:

1. In figuring tax deductions.
2. In determining costs under a government contract.
3. In fixing ceiling prices.
4. In determining costs under any other law.

That is the way the National War Labor Board treated wage violators.

WSB also may ask that violators be denied priorities and materials allocations.

Willful violators may be prosecuted as criminals. WSB would have to refer flagrant violators to the dept. of justice. Penalties up to $10,000 fine and one year imprisonment could be imposed on both an employer and the employee who received the unapproved increase. Such action is unlikely. NWLB never took that step during the war.

A new weapon under the Defense Production Act is the court injunction. Employers and workers may be stopped by injunction from paying and receiving unapproved wage and salary increases. Moreover, through the injunction the employee may be forced to give back any excessive wage increase already received. This, too, is a drastic step not likely to be utilized.

Sub-professionals support unions in elections

Sub-professional employees in the construction industry have given solid support to unions in the few representation elections held for them by the National Labor Relations Board.

The Taft-Hartley labor law made special provisions for separate professional bargaining units four years ago. Since then, 13 elections for professional construction employees have been held, and unions have lost only one, NLRB statistics show.

Only 265 professional employees voted in these elections. All but 12 of

(*Continued on page 82*)

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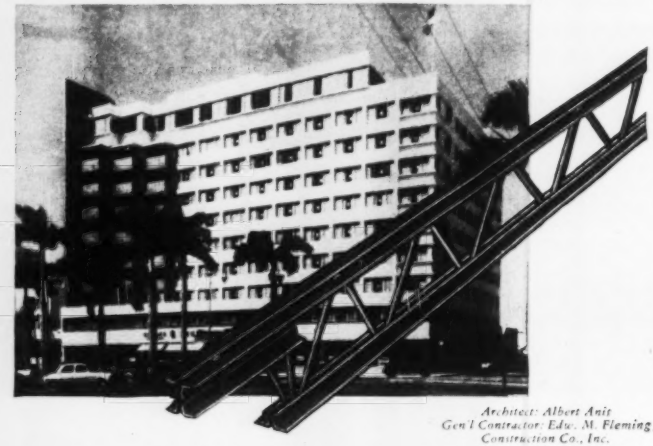

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Gen'l Contractor: Edw. M. Fleming Construction Co., Inc.

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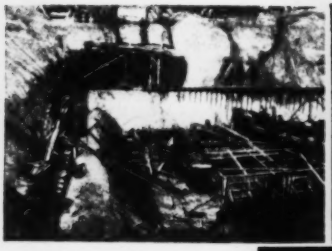

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Labor . . .

them voted for the union. This is much better than the 85% pro-union vote in all NLRB elections held last year.

Most active union in this field is AFL's Federation of Technical Engineers, Architects and Draftsmen.

See long court delay in Brown & Root case

A decision on the appeal of Texas labor unions against a lower court decision favoring the Houston construction firm of Brown & Root (ENR June 21, p. 17) probably is months away, observers at Austin said last week.

The Court of Civil Appeals at Austin indicated it would take its time to study the appeal—and observers pointed out that the court is due to begin its summer recess soon. Should it recess without rendering a decision, the action would postpone a ruling on the matter until October.

A lower court (ENR April 26, p. 26) had held that the unions could not further harass Brown & Root or its jobs in their efforts to force unionization on a firm that claims it has never had a union shop.

Building wages increase slight in first quarter

Union wage scales in the building trades rose by eight-tenths of one percent in the first quarter of 1951, the Bureau of Labor Statistics reports. The advance compares favorably with a rise of 1.8% in the preceding quarter.

BLS estimate of average hourly wage scale of unionized workers in the building trades was $2.38 on April 2, 1951. This scale was 2 cents above the level of January 2, 1951, and 17 cents above the January 3, 1950, level.

In a parallel report, BLS reported that in the month of May, employment in contract construction was 2,600,000—a rise of 100,000 over the previous month.

Labor briefs . . .

• **Newfoundland rates**—The Building Trades Employers Association of St. John's, Newfoundland, has granted a general increase of 5 cents an hour to union carpenters. Rates in the new contract range from 78 cents an hour to $1.02 an hour.

• **Bricklayer contest**—The third bricklayer apprentice competition will be conducted during the Minnesota State Fair (Aug. 25-Sept. 3).

CONSTRUCTION BUSINESS

Industrial work pushes awards high

Topped by the tremendous and continuing boom in private industrial construction, engineering construction awards reached a total of $7,282,929,000 for the first six months of 1951, ENGINEERING NEWS-RECORD reports said last week.

Total for the month of June alone was $1,027,087,000.

The six-month total is more than $2.6 billion higher than the total of awards in the same period of 1950.

• **Industrial at top**—Effects of government efforts to channel construction into fields that have bearing on the nation's rearmament effort are obvious in the six-month figures for the industry.

Topping the list is industrial construction, which in the first six months of 1951 registered contracts totalling $2.3 billion—a 310% gain over the same period of 1950, when $579 million were awarded. For the month of June alone, this category saw contracts of $246 million awarded.

Also contributing heavily to the upswing were: Public residential work, at $329.9 million for the first six months of 1951 up 179% above 1950; unclassified, at $405 million, up 107% over the same period in 1950; private bridges, at $7.5 million, up 87% over 1950.

Other items showing to-be-expected gains in the first half of the present year included: Private unclassified, up 54%; sewerage, up 28%; public buildings (exclusive of housing, up 34%; earthwork and waterways, up 16%.

• **Some down**—Biggest drop-off shows in private residential construction for the half-year. Contracts recorded in this category totalled $1,024 billion; a drop of 46% under the $1.9 billion recorded in the first half of 1950. In the same line, commercial construction, at $347 million, was 25% below the 1950 figures.

Other declines were noted for the half-year period in waterworks—down 3%; public bridges, down 22%; streets and roads, down 12%.

• **Geographic**—By areas in the U. S., the South led the country for the six-month period, with contracts totalling $825.2 million in all categories, a jump of 91% over 1950. Next in line was the Mid West, with $776.1 million for a 73% rise; and the area west of the Mississippi, with a 40% rise.

Trailing far behind was the New England area. Total contracts in that area reached $285.4 million—16% under 1950.

In the same period, a total of $590.3 million contracts were recorded in Canada—a 97% increase over the 1950 period.

Lumber production climbs again

After two weeks of apparent slowdown, production of lumber climbed to a new high for the week ending June 16, the National Lumber Manufacturers Association reported Monday.

NLMA's weekly barometer showed that production of the 483 mills reporting was 17.2% higher than shipments; and production was also 21.1% higher than new orders. Unfilled orders were 52% of stocks.

Reflecting the same general trend, NLMA's monthly analysis of its reports, for the five weeks ending June 2, showed that shipments over the period were 5.1% below production; orders were 8.8% below production; and gross stocks were equivalent to 43 days of average production.

Gas industry outlines $4 billion program

Gas utility companies and pipeline companies in the United States now expect to spend about $4.59 billion for construction of new facilities and expansion of present plant and facilities in the five year period 1951-1955.

According to a survey of the Bureau of Statistics of the American Gas Association, the companies spent more than $3.99 billion in 1946-51.

As in the immediate past, natural gas transmission lines continue to represent the largest single category of expenditures. Nearly half of the planned spending will go for this type of work. Manufactured, mixed and liquified petroleum gas branches will expend about $397 million.

(Continued on page 84)

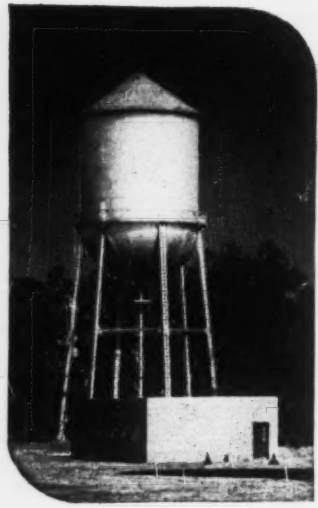
ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—JUNE, 1951

Engineering News-Record reports continental U. S. construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000

Four Weeks — Thousands of Dollars (000 Omitted)

	June, 1951						U. S. Cumulative—Six Months			Canada June,
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1951	1950	Change '50 to '51	1951
Public Works											
Waterworks	782	428	5,589	1,901	9,032	1,794	19,526	115,453	118,467	— 3	922
Sewerage	1,909	4,255	6,394	2,646	3,965	5,806	24,975	164,449	128,006	+28	2,646
Bridges	5,286	1,035	15,147	337	3,762	4,704	30,271	145,930	188,201	—22	691
Earthwork and waterways	180	1,169	7,805	375	9,955	7,124	26,608	273,303	236,282	+16	3,001
Streets and roads	2,077	12,158	20,988	13,806	41,646	17,030	107,735	546,670	617,746	—12	10,189
Public buildings, residential	10,477	21,368	41,485	5,812	14,805	3,904	97,851	329,903	118,110	+179	
Other public buildings	8,742	31,539	24,991	25,690	23,639	31,567	146,168	1,111,744	828,334	+34	9,828
Unclassified	6,380	7,853	29,706	20,401	32,232	33,680	130,252	405,239	195,542	+107	18,144
Total public	35,833	79,805	152,105	70,998	139,036	105,609	583,386	3,092,691	2,430,688	+27	45,421
Federal government (included above classifications	6,336	12,683	41,672	23,080	51,711	45,382	180,864	1,154,100	715,813	+61	11,284
Private											
Bridges								7,438	3,980	+87	
Industrial buildings	4,362	62,205	31,585	85,627	47,725	14,859	246,363	2,374,502	579,187	+310	51,511
Com'l. buildings, residential	3,806	11,745	20,487	36,994	27,229	10,274	110,535	1,024,805	1,906,798	—46	2,350
Other commercial buildings	3,076	14,965	18,528	9,786	8,891	7,654	62,900	347,115	461,560	—25	5,250
Unclassified		585	4,181	484	12,496	6,157	23,903	436,378	282,853	+54	391
Total private	11,244	89,500	74,781	132,891	96,341	38,944	443,701	4,190,238	3,234,378	+30	59,502
Total Engineering Construction:											
June, 1951 — 4 weeks	47,077	169,305	226,885	203,889	235,377	144,553	1,027,087				104,923
May, 1951 — 5 weeks	50,763	253,960	286,368	246,710	248,272	181,922	1,267,995				194,354
June, 1950 — 5 weeks	54,236	334,277	189,210	184,540	311,210	180,247	1,253,720				65,802
Six Months — 1951	238,444	1,329,964	1,574,295	1,342,208	1,820,759	977,259		7,282,929		+29	*590,314
Six Months — 1950	285,421	1,460,208	825,222	776,106	1,304,314	1,013,795			5,665,006		299,295
% Change '50 to '51	—16	—9	+91	+73	+40	—4					+97

* Revised.



THIS TIME IT'S

NACOGDOCHES, TEXAS

Over in the prosperous timber and agricultural belt of east Texas, the city of Nacogdoches is looking and planning for further growth. Needing more water, municipal officials called in Layne and ordered the installation of another deep well and pump unit, —the third since 1925. With this new unit in operation, the city now has a greater supply of water than is presently needed.

These three Layne installations extending back for more than a quarter century, have had every opportunity of failing,—or proving their value in high efficiency, long life and absolute dependability.

Congratulations to Nacogdoches for the continued and exclusive use of the world's finest wells and pumps.

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

ALL PURPOSE PUMPS

Layne's new catalog on Short Coupled Service Pumps will be sent on request. It fully illustrates the many practical applications of these wonderfully efficient all purpose pumps.

Layne
WATER SUPPLY
WELLS & PUMPS

Construction business . . .

Construction, building indexes decline

Cost of construction showed fractional downward movements for the second straight month, according to reports to ENGINEERING NEWS-RECORD.

For July (see also pp. 17 and 19 this issue) the ENR Construction Cost Index was 542.36, and the Building Cost Index 400.36. These figures represented a drop of 0.06% for the Construction Cost index and 0.09% for the Building Cost index over June, and rises of 5.7% and 6.0%, respectively over a year ago.

• **Balance**—As it did a month ago (ENR June 7, p. 82) the index reflects a nice balancing of drops in a number of material items—for the most part lumber and ready-mixed concrete—and relatively slight upward pressures on labor.

Lumber, which dropped in the figures for June, dropped again for July. Fir 2x4's were quoted in the new figures at $106.250 per Mfbm, a drop of 3.4% from the price of $109.955 reported for June. Pine 2x4's were quoted at $91.233, a drop of 2.4% from the $93.517 price for June. Ready-mixed concrete was down 0.2%, and was quoted at $10.925 per cu yd.

Other materials reported include: Structural steel, no change from previous quotes at $3.650 per cwt; sand, at $2.089 per ton, up 0.2%; common brick, at $36.226, up 0.4%; structural clay tile, at $147.598, (per M) up 2.5%.

• **Labor up**—All five categories of labor —common, skilled, bricklayers, structural ironworkers and carpenters— showed small gains.

Carpenters, now quoted (on 20-cities average) at $2.464, were up 1.9% over June; both structural ironworkers and skilled workers were up 1.5%; bricklayers, quoted at $2.956, were up 1.1%; and common laborers, at $1.629, were up 0.8%. All of the labor categories, however, showed substantial increases over July, 1950, ranging from a low of 5.4% (for bricklayers) to a high of 7.5% (for carpenters).

Steel output tops 104 million tons since Korea

A four-month cycle of record high steel production—in which 2,000,000 tons of steel were made during each of 17 consecutive weeks—will be reached this week, the American Iron and Steel Institute said. Steel producers scheduled production at 2,055,000 tons for the current week.

This week's output, AISI said, will bring total steel production in the year since the Korean conflict started to 104 million tons, and become part of new records for quarterly, semi-annual and month of June production.

For the year 1951, 106 million tons of steel will be made.

Business Briefs . . .

• **CMP manual**—A manual for your Controlled Materials Plan record-keeping is available at the National Production Authority, Washington 25, D. C., and will soon be available at Commerce Department field offices. It's called "Alotment accounting for consumers under CMP" and explains the records that must be kept on allotments of steel, copper and aluminum.

• **Hardware standardization**—Makers of builders' finishing hardware are being used as guinea pigs for an NPA standardization order. The country's 350 manufacturers have been shown a proposed regulation that would reduce to 4,000 the present 30,000 sizes and designs of such items as locks, hinges, hangers, hasps, etc. NPA figures the order will save a lot of copper, make possible inventory reductions.

• **Building permits up**—Building permit values in 215 U. S. cities increased 17% in May, to a total of $435,908,489, according to report by Dun & Bradstreet.

• **Housing: Bigger, more costly**—One-family houses started in six metropolitan areas during the first three months of 1951 are larger and cost substantially more to build than in 1949 and 1950, said BLS. Average cost rose about 28%—to $11,765; average size approached the 1,000 sq ft level.

• **More trucks**—The number of trucks and tractor trucks registered for use on U. S. highways rose by 7.2% in 1950, to reach a total of 8,604,448, said the Bureau of Public Roads. Of the total, 8,238,632 were privately owned.

• **N. Y. plans schools**—New York City's Board of Education last week approved a school construction program for 1952 that will include 25 projects to cost a total of $58,000,000.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
August Materials, and Labor Prices will appear in August 9, 1951 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash. dis. not deducted			SAND AND GRAVEL Per ton. carload lots			CRUSHED STONE Per ton. carload lots		CRUSHED SLAG Per ton. carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.: truckload del.: per block		CONCRETE Ready Mixed 1:2:4, over. 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav.	Lt. wgt. agg.	
Atlanta	$3.76	$3.45	3.25	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.191	$0.191		$11.50
Baltimore	3.68	3.37	3.33	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a		10.80
Birmingham	3.11	2.68	2.82g	2.24n	2.24n	1.94n	2.50	2.50	1.10	1.30	.165	.165		7.85
Boston	3.96	3.65	3.58	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.206	.22a		11.50h
Chicago	3.29	2.99	3.94	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b		11.50
Cincinnati	3.46	3.18	3.16	2.00‡c	2.00‡c	2.05‡c	2.35‡h	2.35‡h	....	....	.21	.225a		10.95f
Cleveland	N. A. in C. L.			2.05ef	1.85f	1.65	3.65a	3.65a	2.85‡	2.85‡	....	.23		13.00g
Dallas	2.95	2.65	2.70	2.15	2.15	1.84	2.22	2.38	....	....	.125a	.215		9.30
Denver	3.89	3.64	3.89	1.85	2.00	1.20	....	....	....	....	.22	.255a		10.10
Detroit	3.25f	2.98	3.04	4.00‡b	4.30‡b	3.50‡b	4.00‡	4.00‡	4.00‡	4.00‡	.19	.20a		10.55f
Kansas City	3.30	3.03	3.15	1.90‡	1.90‡	1.50a	1.90‡a	1.90‡a	....	....	.23ag	.23e		10.95b
Los Angeles	4.00a	3.52a	4.72	1.95a	2.20a	1.95a	2.08a	2.08a	....	....	.11f	.225		10.80bm
Minneapolis	3.68cd	3.37cd	3.33	2.30‡ag	2.30‡ag	1.35‡ag	2.50‡ag	2.50‡ag	....	....	.23hk	....		11.25h
Montreal	2.66ac	2.51ac	....	2.50	2.50	2.00i	1.05ij	1.30ij	....	....	....	.20a		9.95ak
New Orleans	3.20e	2.90e	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.28	....		12.90
New York	3.78	3.48	3.35	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....		11.40an
Philadelphia	3.38/3.68‡	3.07/3.37‡	3.38‡	2.65‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....		11.50
Pittsburgh	3.32	3.04	3.32	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.23d		11.00
St. Louis	3.32/3.42b	2.94/3.10b	3.22	2.70am	2.70am	2.30/2.70am	1.70j	1.70j	1.25	1.25	.215	.27cs		10.40
San Francisco	3.35	2.95	....	1.88	1.88	1.98	1.98	....	....	....	....	.26c		10.30c
Seattle	3.80a	3.25a	3.85	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	24f	.3325f		10.95j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges. *f* Paving up to $3.80 for cement brought in from outside sources. *g* Warehouse pickup.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5½ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash. *j* Less 1% for cash. *k* 8x8x18.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *e* 2,000 lb. coner. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†
West Des Moines, Iowa	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†
Nazareth Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†

	Bulk
Toledo, O.	$2.60†
Milwaukee, Wis.	2.75†
Green Bay, Wis.	2.75†
Ironton, O.	2.60†
Montreal City	2.31
W. Winfield, Pa.	2.65†

†*Prices to hold for third quarter of* 1951.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	....	....	....	....	....	....	....	....	....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$.0809	$0.15	$.09w	$.17w	$.09s	$.09	$0.12
Birmingham	.....	45.50i	.....	....	....	....	....	....	....	....	....	....
Boston	.....	.....	.....	24.50a	$35.50a	22.00o	35.50o	.105a	.22	.09s	.095	.22
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bo	29.25bo	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	....	....	....	....	....	....	.....	.....	.....
Cleveland	180.00	55.00d	4.12g	26.50	38.50	26.50o	38.50o	.12w	.24w	.115	.14	.28
Dallas	e	40.00	e	23.95	42.99	.1012	.1898	26.99	47.77	.0987	.1062	.1423
Denver	.....	48.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.....	26.25	.....	26.25o	.....	.1162w	.....	.0925	.....	.215
Kansas City	e	e	e	18.55cl	....	.....	.....	.075cw	.....	.043e	.....	.....
Los Angeles	e	.....	e	15.50dmz	.....	15.50dnz	.....	17.00dz	.....	16.00ds	.0825f	.1525f
Minneapolis	.....	.....	2.83h	26.50	36.50	24.50o	35.50o	25.00	35.50	.095	.1225	.2225
Montreal	137.00	e	e	27.00n	36.65n	16.70nu	18.70nu	16.30nu	18.30nu	15.20nus	.187ns	.229ns
New Orleans	.....	.....	.....	17.50e	....o	17.50eo	.....o	.085ew	.....o	.0882	.085	.....
New York	.....	.....	3.12f	25.50	28.02g	24.50o	44.04go	.1040w	.1819qw	.1040	.1040	.1847g
Philadelphia	175.00	110.00	4.06	22.00	.....	22.00o	.....	.095w	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f	.....	.1698	.....	.0865/.080w	.....	.15	.....	.....
San Francisco	.....	63.73e	.....	17.00g	32.50gp	17.00gkr	32.50	19.00g	36.50	17.50w	.085	.145
Seattle	.....	.....	.....	17.00A	37.50A	16.25Ar	.....	19.50A	.....	18.50As	.095A	.105A

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6¢ treat. *g* 3". *h* 8¢ treat. *i* 3 x 3½ x 8½.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *u* Per 100 gal. *w* Per gal. *z* Also tank trucks.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. struc- tural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.65	$3.70	$3.70	$7.85		$72.00	$80.00	Not	$4.70	$6.15	$4.50	....
Chicago Area	3.65	3.70	3.70	7.85	$4.45	72.00	80.00	avail-	4.70	6.15	4.50	....
Pittsburgh Area	3.65	3.70	3.70	7.85	4.45	72.00	80.00	able	4.70	6.15	4.50	....
Buffalo Area	3.70	3.70	3.70	7.75	4.45	72.00	80.00	....	4.70	6.15	4.50	$9.85
Cleveland			3.70	7.85	....	....	....	....	....	6.15	....	9.85
Youngstown Area			3.70	....	....	....	....	....	....		....	....
Geneva	3.65	3.70	....	....	....	....	....	....	....	6.15	....	....
Los Angeles	....	....	4.10	....	....	....	....	....	....		....	....
Pueblo	3.65	3.70	3.70	....	....	72.00	80.00	....	4.70	6.15	4.50	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price *u* 5 tons to carload lot *b* New billet	Rail steel	Add for switch	$/cwt for Del.	EXPANDED METAL LATH *i* Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No.* 6 & 6 wires
Atlanta	$6.80	$6.65	$6.65	$.025	$.10	$31.50	$31.50			
Baltimore	6.54	5.49*l*			.10	42.00	45.00			
Birmingham	5.70	5.75	5.75	.05	.15	47.00*p*	52.00*p*			
Boston	6.20*kk*	6.19*ck*	6.19*ck*	....	.10/.15	39.00	45.00			
Chicago	5.70	4.95*ff*	4.95*ff*	.0625	....	34.50‡	38.50‡			
Cincinnati	6.24*ak*	5.84*r*	....	....	....	38.50*azee*	41.50*azee*			
Cleveland	5.82	4.81*r*	....	....	.10	37.00‡	40.00‡			
Dallas	8.85	7.00	7.00	....	....	49.00	52.00			
Denver	7.20	7.10*c*	....	....	....	60.00*s*	72.00*s*			
Detroit	6.09	5.59*n*	....	....	.10	53.00	58.00			
Kansas City	6.30*nn*	5.90*ff*	....	....	....	39.50	41.50			
Los Angeles	6.45*hh*	6.15*g*	....	....	.15	48.00	54.00*kk*			
Minneapolis	6.16*hh*	7.32*ll*	7.32*ll*	....	.30	37.00	40.00			
Montreal	6.75*v*	4.75*v*	4.75*g*	....	....	44.10*h*	46.80*h*			
New Orleans	....	5.55*ok*	....	.05	.10	40.00	40.00			
New York	6.30*r*	6.25	6.25	....	.30	38.50*at*	45.00*at*			
Philadelphia	5.99*ii*	5.95*l*	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.40-5.60	5.40-5.60	....	....	.10	34.00	36.00			
St. Louis	6.03*a*	5.34*c*	5.34*c*	....	....	47.00*aa*	53.00*aa*			
San Francisco	7.15*a*	5.75*l*	....	....	.15	40.50	43.50			
Seattle	4.30*r*	5.55*ol*	....	....	....	57.00*mmm*	47.00*mmx*			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.66
F.o.b. Mill: Monessen, Penn., $2.76

A.P.M.* Joliet, Illinois, Donora, Penn., $1.87
F.o.b. Mill: Monessen, Penn., $1.93

A.P.M.* Joliet, Illinois, Donora, Penn., $2.79
F.o.b. Mill: Monessen, Penn., $2.89

* At Producing Mill.

‡ Delivered. *b* 1-5 tons, add 35¢. Less than 1 ton, add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq.yd. *n* 5-10 tons. *o* 5 to 15 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, 2 in., 1¾ in., 15¢, 2½ in., 25¢, 3 in., 50¢, 4 in. 80¢, 4½ in. $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *hh* 10,000-19,999 lbs. *ii* Rolled at Geneva mill. 400-999 lbs. *kk* 4" ribbed. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1-5 tons. ¢ 10 tons to CL. *a* 2000-9999 lbs.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	VITRIFIED SEWER PIPE Per foot, Delivered std. 8 in. ss	std. 12 in. ss	ASTM C13-44T 24 in. ds	36 in. ds	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$99.00	$0.43	$0.67	$3.39*bgg*	$7.00*bgg*	$114.00	$140.00	$0.45	$2.00
Baltimore	109.00	.529	1.0395	4.234	11.2754	178.20	274.80	.90	2.45
Birmingham	93.00	.42	.75	2.99	....	210.00‡	375.00‡	1.25*m*	2.75*m*
Boston	113.00	.532*arz*	1.026*arg*	4.41*arg*	11.685*arg*	187.80*r*	289.20*r*	1.55*mg*	3.80*mg*
Chicago	107.00	.65	1.25	5.10	13.50	270.00‡	270.00‡	.80	2.80
Cincinnati	106.00	.574	1.107	4.32	11.38	154.80	239.70	.75*m*	2.80*m*
Cleveland	108.00	.462*r*	.891*r*	3.69*r*	10.045*x*	147.00	229.00	.80*m*	3.00*m*
Dallas	107.00	.436	.822	3.234*b*	9.17*b*	.....	.....	.49	1.60
Denver	115.00	.435*dd*	.744*dd*	3.18*fd*	.....	.....	.....	.74*m*	2.50*m*
Detroit	108.00	.70	1.35	5.35	13.90	240.00*m*	360.00*m*	.80	3.20
Kansas City	106.00	.50	.88	3.50	.....	216.70	.....	.70	3.00*g*
Los Angeles	122.00	.54‡	1.07‡	5.24‡	13.06‡	228.20	348.90	.85	2.40*ff*
Minneapolis	102.80-112.00	.66*mo*	1.20*mo*	4.85*mo*	.....	.....	.....	1.36*h*	3.87*h*
Montreal	100.00	.85*z*	1.50*z*	5.25*z*	.....	.....	106.50*khaa*	.90	2.45
New Orleans	101.50	.498	.985	5.03	.....	229.70*bb*	402.00*bb*	.65	2.29
New York	111.00	.70	1.19	4.77	12.71	.....	.....	1.05	2.20
Philadelphia	110.00	.65	1.25	4.95*A*	12.65*A*	300.00‡	350.00‡	1.55*h*	3.75*h*
Pittsburgh	109.00	.586*m*	.752*m*	2.83*m*	7.622*m*	147.50	230.00	1.05*h*	2.50*h*
St. Louis	103.00	.51	.93	3.65	8.50	180.00	400.00	1.25*il*	3.15*hl*
San Francisco	122.00	.61*d*	1.20*d*	5.03*d*	12.57*d*	240.00*dll*	400.00*dl*	.95	3.20
Seattle	124.00	.516	.945	.....	.....	150.00*c*	.....	.88*ee*	2.64*ee*

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually $1 per ton less. *b* Extra strength ASTM C 200-44T. *c* 4-in., $.90. *d* SS301-A. *e* 36-in. *g* Culvert pipe. Reinforced, ASTM C 76-41. *h* Reinforced ASTM C 75-41. *i* Reinforced, ASTM C76-37. *j* Centrispun. *k* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *r* Within switching limits. *u* ASTM C13-40. *x* C.L. f.o.b. origin, freight allowed. *z* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60-1941 specifications used. *aa* No. standard specifications in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. *ff* 21%. *gg* Extra strength ASTM C 200-50. *A* Standard strength.

	*WROUGHT STEEL PIPE— (Full standard weight) Butt Weld, Black %	Butt Weld, Galv. %	Lap Weld, Black %	Lap Weld, Galv. %	
3½ to 6 in.	43.5	24.0	43.5	24.0	22.0
8 in.	43.5	24.0	43.5	24.0	22.0
10 in.	41.5	22.0	42.5	25.0	23.0
2½ & 3 in.	43.5	24.0	43.5	24.0	22.0
3½ to 6 in.	43.5	22.5	43.5	24.0b	22.5
8 in.	43.5	22.5	43.5	24.0b	18.0b
10 in.	41.5	22.0	42.5	24.0b	18.5b
Mill					
Lorain, Ohio					43.5
Aliquippa, Pa.					43.5
Sparrows Pt., Md.					32.0b
Benwood, W. Va.					43.5
Youngstown, O.					43.5
Indiana Harbor, Ind.					42.5
Sharon, Pa.					43.5
Wheatland, Pa.					43.5
Etna, Pa.					43.5b
Fontana, Calif.					32.0b

*WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. and 1¼ in. black, + 20.0, galv. + 48.0; 1½ in. black, + 14.0 galv. + 44.5; 2 in. black, 4 galv. + 34.5. *Lap Weld* — 2½ in. to 3½ in. black + 20.5, galv. + 47.5; 4½ in. to 8 in. black + 17.5, galv. + 43.0. Freight rates to destination to be added to name delivered price.

† Threaded and coupled. *b* 3½ to 4 in. *c* Continuous weld. *c* 5 and 6 in.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in Italics)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	†	**$73 00**	**$76 00**	**$67 00**	**$69 00**	**$73 00**	**$76 00**	**$75 00**		
Baltimore	*	**92 50**	**94 50**	**75 00**	**75 00**	**85 00**	**85 00**	**95 00**		
		105 00g	*105 00g*	*101 00g*	*101 00g*	*101 00g*	*101 00g*	*101 00*	*$106 50*	*$106 50*
Birmingham	†	**83 00**	**83 00**	**70 00**	**80 00**	**83 00**	**85 00**	**95 00**		
		85 00	*85 00*	*75 00*	*80 00*	*80 00*	*79 00*	*85 00*	*85 00*	*85 00*
Boston	*	**98 102a**	**104 106a**	**95 99a**	**98 103a**	**103 106a**	**110 00a**			
	†	*96 98*	*92 00*	*105 00*	*105 00*	*105 00*	*$ 00*	*116 00*	*116 00*	*116 00*
Chicago	**	**94 00**	**100 00**	**90 00**	**92 00**	**92 00**	**104 00**	**105 00**		
		105 00	*105 00*	*98 00*	*106 00*	*106 00*	*106 00*	*110 00*	*110 00*	*110 00*
Cincinnati	*	**94 00**	**96 00**	**84 00**	**89 00**	**94 00**	**96 00**	**118 00**		
		112 00	*112 00*	*105 00*	*105 00*	*105 00*	*106 00*	*130 00*	*125 00*	*125 00*
Cleveland	**	**88 00**	**90 00**	**85 00**	**90 00**	**90 00**	**95 00**	*120 00*	*120 00*	*120 00*
Dallas	††	**78 00**	**80 00**	**69 00**	**58 00**	**59 00**	**59 00**	**98 00**		
Denver	*	*No. 1 in stock*		*135 00*	*135 00*	*135 00*	*135 00*	*137 00*	*156 00*	*156 00*
Detroit	†	**104 00**	**107 00**	**100 00**	**107 00**	**110 00**	**113 00**			
		108 00	*104 50*	*105 00*	*105 50*	*104 50*	*103 25*	*120 00*	*120 00*	*120 00*
Kansas City	*	**120 00**	**120 00**	**120 00**	**120 00**	**120 00**	**121 00**			
		120 00	*120 00*	*120 00*	*120 00*	*120 00*	*120 00*	*145 00*	*155 00*	*155 00*
Los Angeles	†	*98 00*	*98 00*	*91 00*	*93 00*	*98 00*	*98 00*	*108 00*	*123 00*	*123 00*
Minneapolis	†	*140 00*	*140 00*	*130 00*	*130 00*	*140 00*	*130 00*	*150 00*	*150 00*	*150 00*
Montreal	†	*ab 98 00*	*100 00*	*95 00*	*100 00*	*110 00*	*125 00*			
		175 00	*175 00*	*175 00*	*175 00*	*175 00*	*175 00*	*175 00*	*175 00*	*170 00*
New Orleans	††	**100 00**	**100 00**	**97 00**	**95 00**	**95 00**	**99 00**	**118 00**		
	†	*100 00*	*102 00*	*107 50*	*108 00*	*107 00*	*104 50*	*118 00*	*122 00*	*112 50*
New York	‡	**100 105**	**104 109**	**100 107**m	**107**a **112**m	**112**a **117**m	**117**a **122**m	**150 160**		
				Range from $115.00 to $120.00				*135 150*	*145/150*	*145/150*
New York	**	**92 00**	**95 00**	**79 00**	**91 00**	**95 00**	**98 00**	**115 00**		
		100 00	*100 00*	*105 00*	*105 00*	*105 00*	*105 00*	*120 00*	*125 00*	*125 00*
Philadelphia				**Range from $117.00 to $127.00**				**117 127**		
				Range from $130.00 to $140.00				*130/140*	*140/150*	*140/150*
Pittsburgh	†			**Range from $85.00 to $90.00**			**90 100**	**90 105**		
				Range from $95.00 to $105.00			*95 105*	*105 140*	*140/150*	*140/150*
St. Louis	†c	**110 00**e	**111 50**e	**94 75**f	**109 50**f	**116 00**e	**125 50**f			
				134 50a	*131 75a*	*131 75a*	*132 25a*	*158 25a*	*158 25*	*158 25*
San Francisco		*$165 00*	*$165 00*	*78 00*	*72 00*	*72 00*	*71 00*	*79 00*	*79 00*	*79 00*
Seattle	†	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*

		LONG LEAF Y. P.		PLYWOOD	
		Merchantable grade up to 20 ft.		Rail freight increment (See note for base price)	
		2x12 Rgh	12x12 Rgh	3/8"	1/4"
Atlanta	†			$22 32	$27 24
Baltimore	*	$155 00	$150 00	22 86	27 90
Birmingham	†	115 00	130 00	21 78	26 58
Boston	*			22 86	27 90
Chicago	**	134 00	134 00	18 72	22 80
Cincinnati	*	125 00	125 00	21 78	26 58
Cleveland	**			22 20	27 12
Dallas	††	108 00	98 00	18 72	22 80
Denver	*			13 92	16 98
Detroit	†	125 00		21 78	26 58
Kansas City	*			16 56	20 16
Los Angeles	†			13 38ab	16 26ab
Minneapolis	†			16 56	20 16
Montreal	†				
New Orleans	††	148 00	140 00	18 72	22 80
New York	‡	210 240	210 240	22 86	27 90
New York	**				
Philadelphia		190 200	190 200	22 86	27 90
Pittsburgh	†	95 100	110 120	22 56	27 48
St. Louis	†c			18 72	22 80
San Francisco				10 08a	12 30a
Seattle	†				

* F.o.b. mill. ** F.o.b. city, C.L. out of yard. ** F.o.b. city, C.L. direct mill shipment † Deliv. to contr. C.L. 1. Retail, LCL, at yard c Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd. 4. May prices same as June.

LUMBER: **Bold Face type, Southern Pine**. *Italics, Douglas Fir.* a Spruce b Tax exempt. c 5M lots. d 8-12 ft. lengths. e 8-16 ft. lengths. f 18 ft. or under. g No. 1 common. i 8 ft. lengths. k No. 3 common

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $3.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 1", $204.00, on 2", $231.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lower rate by water shipment. b 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	70%	80%	$0.2275	
Baltimore	70–10%	78–10%	.2275	
Birmingham	80%	80%	.1750	
Boston	70–10%	70–10%	.2275	
Chicago	78%f	78%f	.2275	
Cincinnati	78%	78%	.2275	
Cleveland	78–10–10%f	78–10–10%f	.2675	
Dallas	75%	75%	.2350	
Denver	81–5%	81–5%	.2425	
Detroit	78–10–10%	78–10–10%	.2275	
Kansas City	80–10–10%	80–10–10%	.2325	
Los Angeles	75%	80%	.23	
Minneapolis	78–10%	78–10%	.2325	
Montreal	45–15%bc	45–15%bc	20 00h	
New Orleans	78%	78%	.2325	
New York	82%f	82%f	.38g	
Philadelphia	76%	78%	.2275	
Pittsburgh	82%	82%	.20	
St. Louis	70–10%e	70–10%e	.2325	
San Francisco	70%	70%	.2275	
Seattle	75%	78%	.21	

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass: a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. c Single thickness. e Discount from list of Jan. 16, 1946. f Disc from Oct. 1950.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per ton. h F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.75. i F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C. I. 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.175	$0.2075	$0.2275
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.18 – .1875	.2125– .22	.2325– .24
Rocky Mtn. States	.18 – .1925	.2125– .22	.2325– .245
Pacific N. W. States	.1775– .19	.21 – .2225	.23 – .2425
Pacific S. W. States	.175 – .1825	.2075– .21	.2275– .2325

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in.– 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in.– 2-ft. from butt	6-in.	60 to 69-ft.	.50	....
12-in.– 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.– 3-ft. from butt	5-in.	90 to 100-ft.	....	....
14-in.– 2-ft. from butt	6-in.	50 to 69-ft.	.50– .60	....
14-in.– 2-ft. from butt	6-in.	70 to 79-ft.	.65	.85
14-in.– 2-ft. from butt	5-in.	80 to 85-ft.	.75	.86
14-in.– 2-ft. from butt	5-in.	85 to 89-ft.	....	.92
14-in.– 2-ft. from butt	5-in.	90 to 100-ft.	....	.94

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	i	....	....	....
	Pine	i	....	....	....
New York	S. L. Sap Pine	$2 10	$3 90	$3 00	$5 00
	Mixed Oak	2 65	4 20	3 25	5 50
Birmingham	Hardwood	2 00	3 13a	2 68	4 16a
Chicago	Red Oak	....	4 00a	....	5 00a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2 15	2 33	3 10	3 13a
St. Louis	White Oak	2 88		3 57	
	Red Oak	2 78	3 43a	3 45	4 42a
	Sap Pine or Cypress	3 26a		4 17	
San Francisco	Douglas Fir	2 31e	3 33ef	3 03bf	4.40eaf
Montreal	Birch or Maple	h	h	h	h

Tr. — Treated; Untr. — Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f F.o.b. cars. h No constant price available. i Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$6 00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25 00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2 20
Soda ash, 58%, in paper bags, per 100 lb. dense	1 60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1 65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8 95

(Continued on page 89)

Dependable Always

- **COMPANIES:** Universal Sewer for vitrified pipe . . . U. S. Concrete for concrete pipe.
- **PRODUCTS.** Quality exceeding specifications of the industry . . . pipe in full range of sizes . . . and other vitrified products listed below.
- **PRICING:** Competitive always . . . fair . . . equitable. Cost advantage in strategic plant locations.
- **DELIVERIES:** Pipe and other products in volume production. Eight plants permit scheduling of capacity requirements.

PRODUCTS

Sewer Pipe (Vitrified)	Slipseal Sewer Joint	Flue Lining
Sewer Pipe (Concrete)	Segment Sewer Block	Stove Pipe
Vitrified Liner Plates	Meter Boxes	Chimney Tops
Tylox Flexible Rubber Coupled Vitrified Pipe	Ship Lap Wall Coping	Chimney Pots
Aerodrane Filter Block	Septic Tanks	Fire Brick
	Drain Tile	Fire Clay

SALES OFFICES:

NEW YORK—3917 LINCOLN BLDG.—60 East 42nd Street. Tel. MU. 7-7395
BALTIMORE, MD.—HALETHORPE BRANCH—Box 7769. Tel. Elkridge 790
PHILADELPHIA, PA.—P. O. BRISTOL, PA.—Box 30. Tel. Enterprise 6015
Tel. Bristol 5571
CINCINNATI, OHIO—P. O. NEWTOWN, OHIO—Box 215. Tel. Locust 7846

FACTORIES:

BALTIMORE, MD., CINCINNATI, OHIO, NEW PHILADELPHIA, OHIO, PALMYRA, OHIO (2), PHILADELPHIA, PA., UHRICHSVILLE, OHIO (2)

UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY

GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED (Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED (Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK (Per M. in quantity, Common backing	Straight hard	LIME (Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$27.78	$27.78	$19.00	$17.50	$17.50
Baltimore	$180.00	$191.00	$358.00	$406.00	$530.00	$605.00	37.00*k*	42.00*k*	30.00	20.60	.....
Birmingham	118.00*p*	128.00*p*	236.00*p*	283.00*p*	.....	.....	24.50*jff*	28.00*pg*	26.37	17.10	.....
Boston	191.65*t*	204.40*t*	383.00*t*	338.00*t*	.....	.....	33.50*ii*	36.50*ii*	30.00*t*	28.00*t*	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	21.00	23.00	30.80	26.00	.....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	38.50*j*	46.00*j*	26.00*j*	24.25*j*	.....
Cleveland	149.00**	156.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	32.75	31.90	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	118.18	126.08	236.40	.....	293.30	335.20	34.00*ee*	32.50*ee*	32.00	32.00	.....
Kansas City	115.50	122.50	245.00	245.00	305.50	367.00	26.00*o*	26.00*o*	30.50	24.50	27.00
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00*kk*	.....	34.00	34.00	35.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*up*	.....	.....	32.00*rp*	36.00	37.00*bbe*	28.00*bbde*	38.00*bbde*
Montreal	150.00*uq*	162.50*uu*	300.00*uu*	.....	.....	.....	26.50	38.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	.....	.....	.....	31.00	.....	.....	20.00	20.00
New York	121.60*hA*	129.70*hA*	178.30*chA*	194.60*hnA*	.....	.....	38.50	.....	38.00	32.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	29.00	32.00	36.00	21.50	.....
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	32.00	40.00*by*	25.00	23.00	2.97*m*
St. Louis	136.00*ee*	156.00*ee*	226.00*ee*	307.50*ee*	345.00*ee*	.....	40.00*nl*	36.00*nl*	.85*aaa*	.65*aaa*	1.10*aaspee*
San Francisco	156.85*u**	177.10*u**	2.5.30*ddu**	187.20*u**	.....	.....	37.00	.....	26.35	26.35	2.62*m*
Seattle	175.00*ee*	190.00*ee*	.....	190.00*eee*	.....	.....	39.00*s*	40.00*s*	37.50*ahA*	1.50*t*	3.90*mAA*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5% 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. *ii* F.o.b. plant. *kk* Per 60 lb. sack, no incr., ton price no longer quoted. **Only 1 plant producing, quotes on warehouse delivery, previous quotes were truck deliv. * F.o.b. Stockton. A. Subj. to incr. not in excess of 10%.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD (Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD (Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT (Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory— Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 350 lb. bbl. per ton
Atlanta	$20.75	$31.02*5*	$1.75	$2.70	$1.65	$2.06*‡*	$2.06*‡*	$1.00*‡*	$36.00*‡*
Baltimore	20.50	30.65	2.65	4.10	3.22	2.50	4.17	4.17	42	37.00
Birmingham	20.75	31.02*5*	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	20.50	30.65	.....	.....	.....	2.89*ky*	2.79*o*	2.79*o*	.47	42.00
Chicago	20.50	30.65	.....	.....	.....	2.73*‡u*	3.04*‡o*	3.04*‡o*	38.00*‡bbr*	43.00*‡*
Cincinnati	20.50	30.65	.....	.....	.....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	20.50	30.65	2.94*pqvA*	3.37*qqB*	2.80*C*	2.50*kq*	2.50*o*	2.50*o*	.36*ff*	40.00*hhA*
Dallas	20.75	31.40	.....	4.05	.....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	21.00	31.15	2.96	4.50	2.86	3.25*o*	2.76*o*	2.76*o*	.47*ff*	42.00*y*
Detroit	20.50	30.65	2.35	3.30	2.50	2.50	2.50*f*	2.50	.51	40.00
Kansas City	20.50	30.77	.....	2.71	2.65	2.39	2.43*o*	2.43*o*	.313	48.00
Los Angeles	20.50	30.90	3.30	4.50	4.20	2.97	2.01*e*	*l*	.44	*l*
Minneapolis	20.50	28.55 30.77	.....	.....	.....	2.50*idd*	2.50*idd*	2.50*idd*	.34*idd*	37.00*r*
Montreal	.....	29.70	3.75*t*	4.20*t*	4.62*t*	3.80*t*	3.85*tf*	3.00*‡t*	.3.15*kt*
New York	20.50	30.65	3.45*y*	.....	.....	2.50	2.50*o*	2.50*o*	.34*z*	37.00
Philadelphia	20.50	30.65	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	20.50	30.65	2.45	2.55	2.20	2.90	2.90*o*	2.90*o*	.39	42.00
St. Louis	20.50	30.65	.....	.....	.....	2.50	2.50	2.50*A*	.36*y*	38.00
San Francisco	20.50	30.90	2.40	3.40	.....	2.95	4.00*aa*	.....	.49	.....
Seattle	20.50	31.15	2.51*m*	2.67*m*	.....	3.58*mqcc*	3.05*mcc*	.....	.59*mcc*	52.00*mcc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal drums. *gg* F.o.b. factory. *hh* Incl. freight. *A.* TTFP 27. *B.* TTA 468A. *C.* TTP 31A.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.50	$2.00	$2.25	$2.25	$2.50	$2.50	$2.35	$1.05	$1.05
Baltimore	3.20*c*	2.42	2.80	2.60 2.80	2.50	2.75	2.50	1.38	1.38
Birmingham	2.75	2.125	2.35	1.975	2.30	2.50	2.50	1.10	1.20
Boston	2.888	2.475	2.75	2.80	2.97	2.75	2.60*h*	1.815	1.815
Chicago	2.925*kA*	2.70*A*	2.75*A*	2.65*A*	2.865*tz*	2.835*m*	2.70	2.03*mA*	2.03*mA*
Cincinnati	2.84	2.475	2.50	1.825 2.85	2.67	2.70	2.64	1.65	1.65
Cleveland	2.70*t*	2.825*d*	2.825	2.76	2.825	2.825	2.825	2.10	1.85
Dallas	3.125*t*	2.25	2.50	2.375	3.125*t*	2.50	2.375	1.20	1.35
Denver	3.00	2.35	2.30	2.35	3.00	2.65	2.65	1.50	1.50
Detroit	2.85	2.60	2.85*m*	2.80	2.964*t*	2.85	2.75*m*	1.90*t*	1.90*t*
Kansas City	2.86	2.365	2.53	2.365 2.61	3.025	2.55	2.625	1.73	1.73
Los Angeles	2.75*B*	2.35	2.50	2.30	3.125	2.625	2.625	1.75	1.75
Minneapolis	2.85	2.33	2.50	2.28	2.75	2.645*u*	2.55	1.67	1.67
New Orleans	2.70	2.06	2.45	2.325	2.375	2.50	2.45	1.10	1.10
New York	3.548*r*	3.096*o*	3.348*o*	3.348*o*	3.599*ar*	3.456*aa*	3.286*p*	1.90	1.90
Philadelphia	3.31*t*	2.65*A*	3.05*tA*	2.90*z*	3.075*k*	3.03*/*3.283*u*	2.825*k*	1.81*A*	1.81*A*
Pittsburgh	3.00	2.65	2.625	2.80	2.625	2.625	2.80	1.60	1.60
St. Louis	3.09*	2.70*A*	2.75	2.76	2.875	2.6775*e*	2.625	1.77	1.77 1.80
San Francisco	3.256	2.45	2.70	2.41	3.00	2.75	2.625	1.70	1.70
Seattle	3.30	2.42	2.57	2.50	3.00	2.65	2.75	1.97	1.95
Montreal*	1.72	1.52	1.62	1.42	1.72	1.62	1.67	1.06	1.00

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.37 homes and housing + 5¢ vacation fund. *i* Incl. 2% welfare. *j* Incl. 9¢/hr. welfare. *k* Incl. 7½ ¢/hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢/hr. welfare ins. fund. *n* Incl. 6¢/hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 4% welfare and pension fund and 4% vacation fund. *u* Incl. 1% welfare fund. *t* Still negotiating. *v* Incl. 10¢ welfare fund. *z* Eff. May 1. *A* Subject to W.S.B. approval. *B* Some contrs. paying 3.00 unofficially.

MEXICO CITY PRICES

In Pesos, F.o.b. City		May '51	June '51
Common Wages—Building (8 hr. day)	av. per hr.	68*	68*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	75*	75*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1 88*	1 88*
Bricklayers (8 hr. day)	av. per hr.	1 88*	1 88*
Struct. Iron Workers (8 hr. day)	av. per hr.	1 05*	1 05*
Struct. Steel Shapes 3" 15" x 12 meters	per metric ton	1,111 01	1111 01
Reinf. Steel, Carr. Rods			
⅜" x 11 meters	per ton	1,261 50	1261 50
½" x 11 meters	per ton	1,251 13	1251 13
⅝" x 11 meters	per ton	1,240 25	1240 25
¾" x 11 meters	per ton	1,230 37	1230 37
⅞" x 11 meters	per ton	1,230 37	1230 37
1" x 11 meters	per ton	1,230 37	1230 37
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	42 00	42 00
Rose Gravel	per tr. load	38 00	38 00
Cement, Std. Port. (Tolteca)	per ton	130 00	130 00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	850 00	850 00
1st Class Pine	per M ft.	1200 00	1200 00
2nd Class Pine	per M ft.	950 00	950 00

* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers). $2.688. **ENR Common Average:** $1.629.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., East Boston—AIRPORT IMPRVS.—B. A. 7/10—State Admin. Bldg., Logan Airport, Contr. SAMB A2, settlement area paving shoulder grading, runways, Logan Airport, $60,000. Plans deposit $10. CD 6/13/45.

BIDS ASKED—BUILDINGS

Conn., Danbury—CLASSROOM, etc.—B.A. 7/13—State State Office Bldg., Hartford. B.A.R.63 classroom, gymnasium and auditorium, Danbury Teachers College. Plans deposit $25. CD 4/24/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† M. J. Burrington, 505 Main St., Burlington, Vt. Contract Awarded, $157,060, clearing, snagging, etc. Roaring Branch, mouses River Basin, at Bennington. CIVENG 30-075-51-92. VERMONT. U. S. Eng., 80 Lafayette St., New York, 13, N. Y. Bids May 16. CD 4/20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John Bowen Co., Inc., 171 Boston St., Dorchester, Mass. Low Bidder, $5,997,600. HOUSING, Mission Hill Extension, Prentiss, Parker and Ruggles Sts., PHA 2-5-6, Roxbury, BOSTON, MASS. City of Boston Housing Auth., 230 Congress St., Boston, Mass. Bids June 15. CD 6/6.

▲ Joseph Rugo, Inc., 581 Boylston St., Boston, Mass., Contract Awarded, $2,073,498. PHA 2-11, HOUSING, Ruggles, Tremont and Whittier Sts. Roxbury, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids May 25, awarded June 12. CD 6/4, under LB.

▲ C. J. Maney Co., Inc., 24 Dane St., Somerville, Mass., and Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass. Low Bidders, $5,700,000. municipal HOSPITAL, Ionia and State Sts., SPRINGFIELD, MASS. City, Pub. Welfare Dpt., Springfield, Mass. Bids June 12. CD 5/23.

† Gilbane Building Co., 90 Calverly St., Providence, R. I. Low Bidder, $3,627,954. R. I. 1-5, PHA, low rent HOUSING, Manton Ave., PROVIDENCE, R. I. Providence Housing Auth., 263 Chad Brown St., Providence, R. I. Bids June 17. CD 6/6.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Del., Wilmington—B.A. 7/10—City, Street & Sewer Dpt., City Hall, Wilmington, intercepting Sewer "C". Plans deposit $25. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, 2, Md., engrs. CD 5/22 4o.

Pennsylvania—B.A. 7/11—Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, Pa., repair, replacement of Big Spring Dam, Newton and Penn Twps., Cumberland Co.; repairs to Reining Pond Dam, Wayne Co. CD 6/11, under LB; Virgin Run Lake and dam, Franklin and Perry Twps., Fayette Co.; repairs, enlargement at Diman Lake Dam, Barr Twp., Cambria Co. Plans deposit $5 each. The Chester Engineers, 210 East Parkway, Pittsburgh, Pa., engrs.

BIDS ASKED—BUILDINGS

† Md., Edgewood—LABORATORY—B.A. 7/10—U. S. Eng., 24 S. and Maryland Ave., Baltimore, Zone 3, protective equip. laboratory at Army Chemical Center. Eng. 13-020-51-37. Bids 5/15 rejected. CD 5/4, under LB.

Pa., Fallowfield Twp.—P. O. Charleroi R. D.)—SCHOOL—B.A. 7/12. Pennsylvania Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, Pa., school addn. for Fallowfield Twp. School Dist. Plans deposit $25. C. R. Greiner, c/o owner, ch. engr. C. C. & E. E. Compton, 41 Thompson Ave., Donora, archts.

▲ Pa., Erie—HOSPITAL—B.A. About 7/15—Hamot Hospital, 4 E. 2 St., hospital addn., modernization, $1,750,000. Johnson, Johnson & Assoc., 821 Commerce Bldg., Erie, engrs. and archts. CD 11/10.

N. Y., Elmira—HOUSING—B.A. 7/17—Elmira Housing Auth., 340 Woodlawn Ave., Contr. 5-6, foundations and general construction, Contr. 13, street and yard imprvs. for Elmira Housing Proj. N.Y. 17B, in an area bounded by Clinton, Baldwin and Dickinson Sts. and the Elmira Neighborhood House. Plans deposit $25. Haskell, Considine & Haskell, 612 Hulett Bldg., archts., adv. ENR 7-5. CD 4/12.

N. Y., Glenwood Landing—GENERATING PLANT—Bids Asked—Long Island Lighting Co., 250 Old Country Rd., Mineola, (selected list bidders) super structure for Electric Generating Plant 2, in Hempstead Harbor. Ebasco Services, Inc., 2 Rector St., New York, Zone 6, engrs. CD 4/19.

† Md., Bethesda—ANIMAL BLDG., etc.—B.A. 7/25—General Services Admin., Pub. Bldgs. Service, 19th and F Sts. N. W., Wash. 25, D. C., Animal Bldgs. 14 and Dog Kennel Bldg. 14A at National Institutes of Health, Proj. 18-063. CD 6/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Carl Buhr, Inc., 1714 Grand Central Terminal, New York, 17, N. Y., Contract Awarded, $879,928, addnl. facilities Hermes Proj. Part IV Eng. 30-075-51-647, MALTA, N. Y. U. S. Eng. 80 Lafayette St., New York 13, N. Y. Bids June 13. CD 5/18.

Fred J. Brotherton, Inc., 185 Atlantic St., Hackensack, N. J., Contract Awarded, $205,853, rehabilitation Suffolk County Air Force Base, WESTHAMPTON, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids May 29. CD 5/24.

▲ NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Franklin Contg. Co., 12 Central Ave., Newark, N. J., Contract Awarded, $1,973,454, constr. 2.233 mi. Sect. 23 B. of N. J. Route 6 from Pine Brook relocation to Little Falls Rd., Caldwell Twp., Essex Co. Bids June 12. CD 6/15, under LB.

Harrison & Burrowes, Inc., 507 Summit Ave., Jersey City, N. J. Contract Awarded, $139,625, regulating gates and spillways and installing Pralliville control structures in Delaware and Raritan Canal Feeder, Stockton, Hunterdon Co., NEW JERSEY State, Div. Water Policy & Supply, 520 E. State St., Trenton, N. J. Bids June 14, awarded June 19. CD 5/31.

Gill-Simpson Electric Co., 10 W. Chase St., Baltimore, Md. Low Bidder, $188,933. 14x14x19 ft. brick, concrete Dundalk Sewage Pumping Station, incl. emergency power generating units, Dundalk, BALTIMORE, MD. City, Bureau Sewers, 312 Municipal Bldg., Baltimore 2, Md. Bids June 6. CD 5/34.

William F. Wilson & Sons, Brookville, Md. Low Bidder, $109,470. Parts A, B, C and E water and sewer extensions, Spring Grove State Hospital, CATONSVILLE, MD. State, Dpt. Pub. Imprvts., 506 Park Ave., Baltimore 1, Md. H. Walton Redmile & Assoc., 2017 Maryland Ave., Baltimore 12, Md., engrs. CD 12/11, under Public Bldgs.

Poole & Kent Co., 2322 N. Charles St., Baltimore, Md. Low Bidder, $234,300. underground steam distr. sys., Spring Grove State Hospital, CATONSVILLE, MD. State, Dpt. Pub. Imprvts., 506 Park Ave., Baltimore 1, Md. H. Walton Redmile & Assoc., 2017 Maryland Ave., Baltimore 12, Md., engrs. CD 12/11, under Public Bldgs.

BUILDINGS

LOW BIDS AND CONTRACTS

Horn Constr. Co., Inc., 2175 Hewlett Ave., Merrick, L. I. Low Bidder, $571,239, foundations for Cooper Park HOUSES (Proj. NY 5-23) in area bounded generally by Kingsland Ave., Frost St., Morgan Ave., Jackson St., Debevois Ave., Maspeth Ave. but excluding strip approx. 80 ft. wide on north of Maspeth Ave. in Boro of Brooklyn, BROOKLYN, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids June 20. CD 6/15.

Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y. Contract Awarded, $750,000. substructure and foundation for ELECTRIC GENERATING PLANT in Hempstead Harbor, equipment awarded, Total $35,000,000. GLENWOOD LANDING, N. Y. Long Island Lighting Co., 250 Old Country Rd., Mineola, N. Y. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., engrs. CD 4/19.

†Dalley & Co., 1427 Cornell Ave., Trenton, N. J. Low Bidder, $531,103, rehabilitation of mobilization type BUILDINGS, FORT DIX, N. J. Dpt. Army, Fort Dix, N. J. Bids June 5. CD 6/1.

Garden Park Development Co., 65 Main St., Mount Holly, N. J. Separate Contracts, $310,000 RESIDENTIAL DEVELOPMENT Monmouth and Ashurst Rds., MOUNT HOLLY, N. J.

George L. Smith, 2 Richmond Ave., Mount Holly, N. J., Separate Contracts, $352,000. RESIDENTIAL DEVELOPMENT, Bertram Manor, MOUNT HOLLY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

Bossert Builders, Quaker Bridge Rd., Trenton, N. J., Separate Contracts, $300,000, RESIDENTIAL DEVELOPMENT Collins Rd., TRENTON, N. J.

Harry Lieb & Benjamin Coleman, 41 Lupton Ave., Woodbury, N. J. Separate Contracts, $429,000, RESIDENTIAL DEVELOPMENT, Quee and Prince Sts., WOODBURY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

Bel-Aire Ranch Homes, 1536 N. 59 St., Phila., Pa. Separate Contracts, $600,000. RESIDENTIAL development, State and Sprout Rds., BROOMALL, PA.

Joseph E. Hefferman, Guilford St. and Rowland Ave., Phila., Pa. Separate Contracts, $558,000. RESIDENTIAL development, Johns St., CHELTENHAM, PA.

Comrs. Delaware Co., Media, Pa., rejected bids June 6, court house annex and garage addn., MEDIA, PA. L. B. $545,600. Will re-advertise. CD 6/12, under LB.

Engel Slass Co., Bustleton Ave. and Philmont St., Phila., Pa. Separate Contracts, $300,000. RESIDENTIAL development, Philmont St., PHILA., PA.

L. F. Driscoll, 18 W. Chelten Ave., Phila., Pa. Contract Awarded, $630,000. LAUNDRY bldg. at Phila. Byberry State Hospital, PHILA., PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Awarded, June 20. CD 5/7 under LB.

Mullan Contr. Corp., 3945 Greenmount Ave., Baltimore, Md. Contract Awarded, $300,000. 3 deck resin. con. PARKING STRUCTURE, 31 W. Saratoga St., BALTIMORE, MD. Rennert Parking Garage, 31 W. Saratoga St., Baltimore, Md. CD 1/18.

† Standard Engineering Co., 2129 Eye St. N. W., Wash., D. C. Low Bidder, $337,592, POWER PLANT remodeling at National Bureau of Standards, WASH., D. C. General Services Admin., P. Bldgs. Service, General Services Bldg., Wash., D. C., Bids June 19. CD 5/29.

SOUTH

BIDS ASKED—BUILDINGS

N. C., Durham—HOSPITAL—B.A. 7/24—Watts Hospital, c/o Geo. Watts Carr, archt., 111 Corcoran St., Durham, N. C., hospital addns. Plans deposit $50.

▲ Ala., Anniston—REPAIR SHOP—B. A. About 7/15—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., repair shop at Alabama Ordnance Depot, $3,000,000. CD 2/8.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & Pub. Wks., Raleigh, rejected bids May 29, grading, subgrade reinf. 9.95 mi. from Wingate to Parkesville Rd., via Chapanoke, from county road 1.8 mi. east of Belvidere to county road 2.2 mi. north of Winfall. Proj. 1-701. Perquimans Co. L. B. $120,896. CD 6/4, under LB.

Ben B. Propst, Box 526, Concord, N. C. Low Bidder, $64,260. bit. or b. conc. 18 mi. 7 sections county roads Proj. 5-9-42-209, Alamance Co., NORTH CAROLINA. State Hy. & P. Wks. Comn., Raleigh, N. C. Bids June 19. CD 6/13.

Leo T. Barber, Moultrie, Ga. Contract Awarded, $90,500. 84 mi. rural distr. lines in Polk and Osceola Counties, FLORIDA. Peace River Valley Electric Membership Corp., Wauchula, Fla. CD 5/31/50.

Lastinger Eng. & Contg. Co., 310 Franklin St., Tampa, Fla. Contract Awarded, $175,000, airport addns., BARTOW, FLA. Garner Aviation Service Corp., c/o contractor.

Hendry Corp., Rattlesnake, Fla. Low Bidder, $476,150. dredging at bulk petroleum fuel terminal, NOY 28278, JACKSONVILLE, FLA. Dpt. Navy, Box 365, Charleston Naval Base, S. C. Bids June 19. CD 5/29.

Cone Bros. Contg. Co., Caeser and Cumberland Rds., Tampa, Fla. Low Bidder, $44,785. repairing Hills-

(Continued on page 92)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

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(Continued from page 90)

borough River Waterworks Dam, TAMPA, FLA. City, Tampa, Fla. CD 7/20/45.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

T. L. James & Co., Inc., Ruston, La., Low Bidder, $936,691, c. conc. 9.998 mi., Gramercy-Bonnet Carre Hy., State Rte. C-1500, S.P. 7-04-07 and 7-03-16, F.A. Proj. FI 172 (6) and FI 173 (14), St. John and St. Charles Parishes. Bids June 13. CD 5/23.

KENTUCKY, State Hy. Dpt., Frankfort, rejected bids June 8, traffic bound limestone 4.223 mi. Union Temple Rd., RS 54-800, Hopkins Co., L. B. $147,-914. CD 6/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

R. R. Richardson & Co., 25 and Newport Ave., Norfolk, Va. Contract Awarded. $852,000. Lake hurst SCHOOL, NORFOLK, VA. City, Norfolk, Va. Bids June 12. CD 6/20, under LB.

▲ R. H. Wattinger, 11 N. 6 St., Richmond, Va., and Thompson & Street, Pineville Rd., Charlotte, N. C., Low Bidder, $7,672,000. Rob HOUSING units, RICHMOND, VA. Richmond Redevelopment and Housing Auth., 100 E. Main St., Richmond, Va. Bids June 20. CD 5/31.

W. G. Hollifield, Haw Creek Rd., Asheville, N. C. Contract Awarded. $214,500, Montford Avenue SCHOOL, ASHEVILLE, N. C. City, Asheville, N. C. CD 6/7, under LB.

J. A. Jones Constr. Co., 209 W. 4 Ave., Charlotte, N. C., Contract Awarded. Approx. $100,000, MILL No. 4 addn., alterations, HANES, N. C. P. H. Hanes Knitting Co., Hanes, N. C. Bids June 14. CD 6/6.

W. E. Dale Constr. Co., Morganton, N. C. Low Bidder, $398,500, general construction, HOSPITAL SERVICE BLDG., MORGANTON, N. C. State Hospital, Bd. Controls, Roy Purser, bus. mgr., Raleigh, N. C. Bids June 20. CD 5/17.

Southern States Iron Roofing Co., Stiles Ave., Savannah, Ga. Owner Builds. $100,000. WAREHOUSE, AUGUSTA, GA. CD 6/5.

A. C. Samford, Inc., Albany, Ga. Contract Awarded. $389,875, HOUSING units, COCHRAN, GA. Cochran Housing Auth., Cochran, Ga. Bids June 19. CD 6/5.

Williams Constr. Co., 1032 13 St., Columbus, Ga. Low Bidder. $948,800, HOUSING units, COLUMBUS, GA. Columbus Housing Auth., 438 Martin Bldg., Columbus, Ga. Bids June 19. CD 5/29.

A. B. Newton Co., Vidalia, Ga. Contract Awarded. $349,-270. HOUSING units, EASTMAN, GA. Eastman Housing Auth., Eastman, Ga. Bids June 19. CD 5/29.

The Artley Co., E. Bay St., Savannah, Ga. Contract Awarded. $125,000, BAKERY addn., SAVANNAH, GA. Claussen's of Savannah, 1330 W. Bay St., Savannah, Ga.

W. B. Johns, 711 Palatine Ave. S.E., Atlanta, Ga. Low Bidder. $711,880, HOUSING units, TIFTON, GA. Tifton Housing Auth., Tifton, Ga. Bids June 19. CD 6/7.

▲ Delta Constr. Co., Brunswick, Ga. and Paul H. Keasling, Waycross, Ga. Low Bidder, $1,756,149, HOUSING units, WAYCROSS, GA. Waycross Housing Auth., Waycross, Ga. Bids June 19. CD 5/24.

▲ Southeastern Mortgage Co., 947 W. Flagler St., Miami, Fla. Low Bidder. $2,541,300. Construct, manage and finance Title 8 HOUSING, incl. 392 military housing units, at Green Cove Springs Naval Base, GREEN COVE SPRINGS, FLA. Dpt. P. Wks. Office, Box 365, Naval Base, S. C. Bids June 21. CD 5/29.

Jones & Hardy, Montevallo, Ala. Low Bidder. $628,-888. HOUSING units, SELMA, ALA. Selma Housing Auth., Selma, Ala. Bids June 18. CD 5/23.

Consolidated Bldg. Corp., Tuscumbia, Ala. Contract Awarded. $512,600. HOUSING, Proj. Ala. 59-1 and Ala 59-2. TUSCUMBIA, ALA. Tuscumbia Housing Auth., Tuscumbia, Ala. Bids June 11. CD 5/25.

▲ Foster & Creighton Constr. Co., American Natl. Bank Bldg., Nashville, Tenn. Contract Awarded. $4,244,-000. 500-unit public HOUSING for negroes on Johnston Ave.; J. A. Jones Constr. Co., 10th St. N. E., Atlanta, Ga., $2,397,900, 249-unit public housing for whites, on S. Seventh St. NASHVILLE, TENN. Nashville Housing Auth. 701 N. 6 St., Nashville, Tenn. Bids June 20. CD 5/10.

W. F. Holt & Son, 1541 Demonbreun St., Nashville, Tenn. Contract Awarded. $250,000. Bedding products mfg. PLANT, NASHVILLE, TENN. Jamison Bedding Co., Inc., 100 N. 1 St., Nashville, Tenn. Hart, Freeland & Roberts, 3 Natl. Bank Bldg., Nashville, Tenn., archts.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., La Grange—SCHOOL—B.A. 7/10—School Dist. 105, Supt. Schools, 7 Ave. School Bldg., La Grange, 1 story, 5,400 sq. ft., Hotykins School addn., 1 story, 33,000 sq. ft. Ideal School, 1 story, 14,000 sq. ft., masonry. West Side School. Perkins & Will, 309 W. Jackson Blvd., Chicago. Zone 6, archts.

O., Columbus—RECEIVING, etc.—B.A. 7/10—Dpt. P. Wks., Columbus, Zone 15, combined receiving and hospital bldg., Bureau Juvenile Research, $400,000. Inscho, Brand & Inscho, 60 E. Broad St., Columbus, O., archts. CD 1/5/49.

O., Dayton—SCHOOL—B.A. 7/12—Bd. Educ., Mad River School Dist., Harshum Rd., 2 story school. Plans deposit $10. Walker, Norwick & Assoc., 1301 4, American Bldg., Dayton, archts. CD 5/2.

▲ Ill., Collinsville—HOUSING—B.A. 7/16—Madison County Housing Auth., D. F. Braner, exec. dir., 3 and Haller Sts., East Alto Project 15-6 consisting twenty-two bldgs., incl. 100 units, and 1 story management and maintenance bldg., $1,000,000. Friedman, Alschuler & Sincere & Ernest A. Grunsfeld Associated Architect & Engineers, 223 W. Jackson Blvd., Chicago, Zone 6, archts. CD 3/21.

Ill., Arlington Heights—FACTORY—Bids Asked—Emerol Mfg. Co., factory with office, $200,000. Carl M. Teutch, 110 W. Lawrence St., Chicago, Zone 40, archt.

Ill., Waukegan—APARTMENT—Bids Asked—Owner, c/o Clarence L. Dahlquist, archt., 1625 Glenview Rd., Glenview, three 78-unit apartments, North Ave. $600,-000.

SOON LETS CONTRACT BUILDINGS

Mich., Durand—SHOP—Grand Trunk & Western R. R. Co., A. N. Laird, ch. engr., 441 E. Jefferson St., Detroit, soon lets contract 1 story, masonry railroad equip. shop.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Simpson Constr. Co., 1111 S. Hermitage St., Chicago, Ill. Low Bidder, $781,845, est. $724,940, hydrant aircraft fueling and bulk storage facilities at Wright Patterson Air Force Base, DAYTON, O. U. S. Eng., 8730 W. Broadway, Louisville 3, Ky. Bids June 21. CD 6/11.

† U. S. Eng., 834 S. Court House & Custom House 1114 Market St., St. Louis 1, Mo., cancelled bids to have been opened June 22, dredging and satisfactory disposal from 300,000 to 600,000 cu. yd. materials in Alton Pool in Illinois Waterway, CIVENG 23-065-51-81, ILLINOIS. CD 6/13.

ILLINOIS—State Div. Hys., State Capitol, Springfield, rejected bids May 25, bridge and paved approaches Ill. 3, Union Co., L. B. $72,095; repairs to grade separation bridge on Ill. 98, Chicago, Cook Co., L. B. $142,375. CD 5/31, under LB.

ILLINOIS—State Div. Hys., State Capitol, Springfield, rejected bids May 25, c. conc. wid'n. 12.25 mi. Ill. 104, Adams Co., L. B. $167,141; c. conc. wid'n. and c. conc. 12.16 mi., U. S. 24, Woodford Co., L. B. $321,956. CD 5/31, under LB.

Bituminous Fuel & Oil Co., 509 First National Bank Bldg., East St. Louis, Ill., Low Bidder. $95,522, second stage constr., Cairo Airport incl. runway lighting sys., lights grading, drainage, service and entrance roads, fencing and sidewalk, CAIRO, ILL. Alexander Co. Airport Auth., Cairo, Ill. Bids June 19.

▲† Thos. McQueen Co., 1313 Circle Dr., Forest Park, Ill., Low Bidder, $1,481,000, runway extens. and taxiway paving at Glenview Naval Air Station, GLENVIEW, ILL. Dpt. Navy, Ninth Naval Dist., Great Lakes, Ill. CD 5/1.

Geo. D. Hardin, 2130 S. Michigan Ave., Chicago 16, Ill. Contract Awarded. $209,500, paving Bristol and other streets, S. E. District of WESTCHESTER ILL. Village. Bd. Local Improvs., Westchester, Ill. Awarded June 14. Consoer Townsend & Assoc., 351 E. Ohio St., Chicago 11, Ill., engrs.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Ebasco Services, Inc., 2 Rector St. New York, N. Y. Contract Awarded. Approx. $20,000,000. Design and construct brick jet engine components FACTORY, COLUMBUS, O. Westinghouse Electric Corp., J. H. Ashbaugh, v.p., Electric Appliance Div., Mansfield, O. Work started. CD 6/5.

Bd. Educ., Fayette, O., rejected bids May 28, 2 story SCHOOL addn., FAYETTE, O. $343,000. CD 5/1.

▲ Northview Builders, Inc., c/o M. M. Jamison, pres., c/o Jamison Heating and Air-conditioning Co., 603 Warren St., Dayton, O. Owner-Builds. Approx. $3,500,-000. 156 individual HOUSES, and 26 four-family APARTMENTS on tract on east side of U. S. Route 25 just north of U. S. Route 40, VANDALIA, O.

▲ A. J. Glaser Co., Muncie, Ind. Low Bidder. Est. $2,-000,000 incl. equip. PLANT addns., ANDERSON, IND. Delco-Remy Div., General Motors Corp., 2401 Columbus Ave., Anderson, Ind. CD 5/1.

▲ W. O. Pope c/o Pope Automatic Attachment Co., Greenfield, Ind. Own Forces. $2,000,000. 150 limestone HOMES at west edge of GREENFIELD, IND.

Michuda Bros. Constr. Co., 11351 S. Michigan Ave., Chicago, 28, Ill., Low Bidder, $765,000 with 17 subs. 2 steel, concrete, brick, stone Rogers Elementary SCHOOL addns., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, 1, Ill. 2Bids June 12.

† Wm. E. Schweitzer, 2207 Dodge Ave., Evanston, Ill., Contract Awarded. $686,000, 2 story, 60x250 ft. brick rein.-con. NADD BLDG., GREAT LAKES, ILL. Dpt. Navy, Ninth Naval Dist., Great Lakes, Ill. Awarded June 14.

▲† Blaw-Knox Constr. Co., 321 Penn Ave., Pittsburgh, Pa. Contract Awarded, reactivating the Kankakee Ordnance Works at JOLIET, ILL. by U. S. Rubber Co., 1230 Ave. of Americas, New York 20, N. Y. for U. S. Eng., 520 Merchandise Mart, Chicago 54, Ill. CD 2/9.

Nelson & Co., 1550 Yout St., Racine, Wis. Contract Awarded. $130,000, 13,000 sq. ft. FACTORY addn., RACINE, WIS. Webster Electric Co., Racine, Wis. M. Ronneberg, 3906 N. Harlem St., Chicago 34, Ill., archt. Awarded June 13.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Colorado—B.A. 7/10—Bureau Reclamation, Dpt. Interior, Grand Lake, Colo., site development and interior painting for Granby Pumping plant Colorado-Big Thompson Proj., Spec. 794C-183. L. N. McClelland, Bldg. 1-A, Denver Federal Center, Denver, Colo. ch. engr.

▲ Texas—B.A. 7/20—U. S. Eng., 606 Santa Fe Bldg. Galveston, seawall extension, CIVENG 41-243-51-91 $2,500,000. Bids 6/12 rejected. CD 5/18, under LB.

† Ark., Little Rock—FENCE—B.A. 7/24—Veterans Ad min., Vermont Ave. between H and & Sts., N.W. Wash., 25, D. C. boundary fence for Veterans Administration Hospital, Spec. 5112e, Proj. 2897.

† Colorado—CONTROL, etc.—B.A. 7/31—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, control, switchgear assembly, circuit breaker, removable element, for Willow Creek Pumping Plant, Colorado-Big Thompson Proj., Spec. DS-3464 L. N. McClellan, ch. engr.

BIDS ASKED—BUILDINGS

Minn., St. Paul—SCIENCE—B.A. 7/12—Regents o University of Minnesota, R. S. Callaway, purch. agt. 323 Admin. Bldg., Minneapolis, veterinary science bldg. on campus. $450,000. C. H. Johnston, 715 Empire Bank Bldg., archt.

▲ Tex., Austin—SCHOOL—B.A. 7/17—Austin Independent School Dist., Austin, concrete, brick, 110,000 sq. ft. South Austin High School, $500,000 to $1,200,000. Plans deposit $25. Jessen, Jessen, Millhouse & Greeven, 2816 N. Guadalupe St., archts CD 11/15.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

South Dakota—RURAL DISTRIBUTION LINES—East River Electric Power Co-operative, Madison, soon lets contract 133.8 mi. rural distr. lines, Lake Co. $275,-000. Banister Eng. Co., 1547 University Ave., St Paul, Minn., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONT

MINNESOTA—State Hy. . 1246 University Ave. St. Paul.

McLean-Astleford Co. and Kimmes Constr. Co., Hastings Minn., Contract Awarded. $558,742, grading, bridges 9.6 mi. between Hamel and 0.2 mi. west of JCT T.H. 100, Hennepin Co. Bids June 8. CD 6/23, under LB.

▲ Allamakee-Clayton Electric Co-operative, Postville Ia., Force Account, $1,268,000, 204½ mi. rura distr. lines; 115½ mi. tie lines, headquarters facilities, two-way radio system and completing previously approved projects, IOWA Brown Eng. Co., KP Bldg Des Moines, La., engr. CD 4/2.

MISSOURI—State Hy. Dpt., Jefferson City, W. T Menefee Constr. Co., Sedalia, Mo., Contract Awarded $139,077, graded earth, 24 ft., c. conc. 2.027 mi. Lafayette Co.; $272,399, graded earth, 24 ft b. conc. 3.993 mi. Lafayette Co. Awarded June 21 CD 4/11.

MISSOURI—State Hy. Dpt., Jefferson City, R. G. Aldridge, 1610 Nebraska St., Kansas City, Mo. Contract Awarded, $209,181, two 54 ft., one 65 ft. continuous I-beam spans, two 51 ft. continuous I-beam span two 92 ft., one 115 ft. continuous plate girder span, Montgomery Co.

Knutson Gould Constr. Co., 3527 Broadway, Kansas City Mo., $89,373, two 80 ft. one 100 ft. continuous I-beam span, one 55 ft. I-beam spans, Sta. 158 plus 85, Dade Co. Bids June 1. Awarded June 21 CD 5/18.

Luft-Constr. Co., 111½ W. 5 St., Pine Bluff, Ark Contract Awarded, Approx. $100,000, underground telephone cable from Little Rock to Pine Bluff about 45 miles, Southwestern Bell Telephone Co., 715 Louisiana St., Little Rock, Ark. Bids June 12 CD 6/8, under Ark., Little Rock.

† W. E. Caldwell Co., 200 E. Brandeis St., Louisville Ky. Contract Awarded, $54,985, steel water tank and tower Veterans Administration Hospital, NORTH LITTLE ROCK, ARK. Veterans Admin., Munition Bldg., Wash. 25, D. C. Bids May 29, awarded June 11. CD 6/5, under LB.

† Peter Kiewit Sons Co., National Bank Bldg., Omaha Neb. Contract Awarded. Est. $130,000, aprons and taxiways at Rapid City Air Force Base, RAPID CITY S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb Bids June 22. CD 6/12.

KANSAS—State Hy. Dpt., Garden City,
Peter Kiewit Sons' Co., Airport P. O., Wichita, Kan Contract Awarded. $142,541, base, single asph surf. tr. 6.015 mi. Proj. 83-41 F 017-1 (6), Haskell Co. Bids June 15. CD 6/7.

KANSAS—State Hy Dpt., Hays,
D. G. Hansen, Logan, Kan. Contract Awarded. $153,-711. base, single asph. surf. tr. 6.355 mi. and 0.141 mi., Proj. 183-82 F 031-2 Parts I and II Rooks Co. Bids June 12. CD 6/4.

KANSAS—State Hy. Dpt., Hutchinson,
J. H. Shears' Inc., Hutchinson, Kan. Contract Awarded base, single asph. surf. tr. 14.005 mi., 0.378 mi. and 0.66 mi., Proj. 61-78 K 5197 (1), Part I, I and III, Reno Co. Bids June 6. CD 5/21.

OKLAHOMA—State Turnpike Auth., Capitol, Oklahoma City, Zone 5,

S. E. Evans, Fort Smith, Ark., Low Bidder, **$486,249**, est. $386,840, grading, drainage roadbed 6.292 mi. Bristow, Creek Co., **$352,503**, est. $377,704, grading, drainage, roadbed 5.996 mi. Chandler, Lincoln Co.

Annis Constr. Co., 1647 Exchange St., Oklahoma City, 8, Okla., **$473,280**, est. $382,325, grading, drainage, roadbed 5.023 mi., Davenport, Lincoln Co.

M. E. Gillioz, Monett, Mo., **$129,491**, est. $130,909, grading, draining roadbed 3.982 mi., Wellston, Lincoln Co. CD 6/12, under LB.

Home Bldg. National Co., Sapulpa, Okla. Low Bidder, **$174,857**, est. $248,835, fencing 88 mi. turnpike; **M. E. Gilloiz**, Monett, Mo., **$488,650**, est. $540,250 guard rail for 88 mi. turnpike, OKLAHOMA. Oklahoma Turnpike Auth., Capitol, Oklahoma City, 5, Okla. Bids June 14.

W. E. Steelman, 2800 N. E. 4 St., Oklahoma City, Okla., Low Bidder. **$404,751**, est. $411,015. asph. runways at Will Rogers Airport, OKLAHOMA CITY, OKLA. City, Oklahoma City, Okla. CD 6/13, under LB.

† **John F. Buckner & Son**, Cleburne, Tex. Low Bidder, **$339,200**. Part II, clearing, excav., channel of Trinity for floodway control Fort Worth, TEXAS. U. S. Eng., 1127 T & P Bldg., Fort Worth, Tex. Bids May 1. CD 4/5.

† **Strain & Brown, Inc.**, P. O. Bo 1057, San Angelo, Tex. Low Bidder, **$763,763**. runway and taxiway pavement at Air Force Base, BIG SPRING, TEX. U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex. Bids June 22.

† **A. P. Kasch & Son**, Big Spring, Tex. Low Bidder. **$264,667**, fueling facility and auto fuel storage bldg. ***Enix Constr. Co., Amarillo, Tex., **$156,869**. rehabilitation utilities***J. Ray Givens, Lubbock, Tex., **$69,830**, bldg. to house radio facilities at Air Force Base, BIG SPRING, TEX. U. S. Eng., 1127 T & P Bldg., Fort Worth, Tex. CD 4/17.

† **H. E. Beall**, Gatesville, Tex. Low Bider, **$89,998**, navigation facilities, Inv. No. Eng 41-243-51 71; **$252,817**, communication facilities and 4 masonry type bldgs. incl. heating and air-conditioning systems, Inv. No. Eng 41-243-51-71; **$179,500**, roads Inv. No. Eng 41-243-51-71, all for Gray Air Force Base, KILLEEN, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids June 14. CD 2/2.

† **Koeneke & Latimer Constr. Co.**, 1945 Ivanhoe St., Denver, Colo. Contract Awarded. **$531,000**. 66x340 ft. academic bldg., roads, parking areas at Lowry Air Force Base, 29-066-51-61. DENVER, COLO. U. S. Eng., 1609 Jackson St., Omaha, Neb. Bids June 5, awarded June 12. CD 5/23.

† **Morrison-Knudsen**, 2001 E. Gold St., Albuquerque, N. M. Low Bidder, **$329,237**, est. $388,566. 69x30 ft. steel alert hangar for Kirtland Air Force Base, Serial No. 29-005-51-61, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 21.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Robert E. McKee, Inc.**, Box 562, El Paso, Tex., Low Bidder. **$2,303,000**, est. $432,000. Tex. 3-4, 54 two story DWELLING Bldgs., of total 216 units, and one MAINTENANCE bldg., EL PASO, TEX. El Paso Housing Auth., El Paso, Tex. Bids June 15. CD 5/22.

▲† **T. C. Bateson Co.**, Irwin-Keasler Bldg., Dallas, Tex., Low Bidder. **$2,093,395** (Alt. 1), one 200x 1,200 ft., and one 200x400 ft. WAREHOUSES, at Fort Worth Quartermaster Depot, FORT WORTH, TEX. U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex., Bids June 21.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd., Houston, Tex. Contract Awarded. Approx. **$3,000,000**. 7 story, bsmnt. HOSPITAL, incl. power plant and laundry plant, HOUSTON, TEX. St. Luke's Episcopal Hospital, 1910 Crawford St., Houston, Tex. Awarded June 20. CD 11/2.

J. A. Sharrock & Sons, Marshall, Tex. Low Bidder. **$347,000**. 25 DWELLING units. MAINTENANCE bldg., Proj. Tex. 44-1. 25 DWELLING units earthwork site imprvs., Proj. Tex. 44-2. JEFFERSON, TEX. Jefferson Housing Auth., Jefferson, Tex. Bids June 14.

Kelly D. DeBusk, 2607 Westover St., Austin, Tex. Contract Awarded. **$520,960**. 66 DWELLING units for total 33 dwellings, Tex. 4-1, LULING, TEX. Luling Housing Auth., Luling, Tex. Awarded June 18. CD 6/13, under LB.

M. R. Nelson Co., McAllen, Tex. Low Bidder. **$544,000**. 75 low cost brick exterior DWELLING units, concrete slab fdn., Tex. 73-1, PHARR, TEX. Pharr Housing Auth., Pharr, Tex., Bids June 20. CD 6/1.

McNichol Constr. Co., 33 S. Fox St., Denver, Colo., Low Bidder, **$434,989**, est. $550,000, 1 and 2 story, 128x176 ft. GYMNASIUM bldg. and 1 story, 52x156 ft. VOCATIONAL AGRICULTURAL bldg. at Junior and Senior High School, FORT MORGAN, COLO. School Dist. 3, Fort Morgan, Colo. Bids June 12. CD 5/31.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Calif., Oakland—B.A. 7/13—East Bay Municipal Utility Dist., 512 16 St., 6 m.g.p.d. capacity Fernside Sewage Pumping Plant, etc. Marina Dr. and High St., SD-72, Alameda. CD 11/13/46.

† **Calif., Inyokern**—ELECTRIC DISTRIBUTION SYSTEM—B.A. 7/19—Constr. Officer, Bldg. 981, Naval Ordnance Test Station, Inyokern, electric distr. and regulator sys., Ballistic Ground Ranges, Spec. 30040. Plans deposit $15.

† **Calif., Inyokern**—TEST BLDGS.—B.A. 7/19—Officer in Charge of Constr. Bldg. 981, Naval Ordnance Test Station, Inyokern, Navy-test bldgs. and facilities, transmitter tower, transmitter bldg., range operation bldg., ordnance breakdown bldg., range storage bldg. No. 2, Spec. 30041. Plans deposit $150.

† **Wash., American Lake**—B.A. 7/31—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., 25, D. C., addnl. water supply main for Veterans Admin. Hospital, Spec. 51129, Proj. 56-5053.

BIDS ASKED—BUILDINGS

Wash., Kelso—SCHOOL—B.A. 7/12—School Dist. 403, Kelso, 90,000 sq. ft. junior high school, $850,000. Plans deposit $50, for general $25 each, for mechanical and electrical work. Wolff & Phillips, 509 Pearson 4 Ave. Bldg., Portland, Ore., archts. CD 4/18.

▲ **Wash., Port Angeles**—SCHOOL—B.A. 7/12—School Bd., Port Angeles, five 1 story frame, masonry high school buildings, $1,211,000. Mallis & De Hart, Lyon Bldg., Seattle, Zone 4, Wash., archts. CD 11/15/50.

† **Wash., Richland**—AQUATIC BIOLOGY—B.A. 7/23—General Electric Co., Richland, prime contractor to Atomic Energy Comn. for operation of Hanford Works, 1 story, 79x116 ft., masonry equatic biology bldg. at Hanford Works, with pipe lines and fish ponds. Plans deposit $50. CD 4/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Roy L. Blair & Co.**, 1220 Ide St., Spokane, Wash. Low Bidder. **$819,660**, est. $786, 398. Bridge over Morse Creek on relocated State Hy. No. 21, Inv. 51-60, IDAHO. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids June 21. CD 5/1.

IDAHO—State Hy. Dut., Boise.

Quinn & Robbins Co., Inc., 703 S 16 St., Boise, Idaho. Contract Awarded. **$254,504**. 3 concrete bridges, 1 culvert over Boise River. Awarded June 14. CD 9/20/45.

† **Grafe-Callahan Constr. Co.**, 1 National Bank Bldg., Dallas, Tex. Low Bidder. Schedule 1, **$2,400,230**, est. **$1,692,925**, completing Davis Dam Spillway stilling basin; Schedule 2, **$381,650**, est. $235,250, excavation for Colorado River Channel imprvt. Davis Dam Proj., Spec. DC-3413, ARIZONA-NEVADA Bureau Reclamation, Dpt. Interior, Davis Dam, Ariz. Bids June 14. CD 5/10.

† **New State Elec. Co.**, 214 W. Washington St., Phoenix, Ariz. Contract Awarded. **$184,236**, airfield lighting at Luke Air Force Base, ENG 04-353-51-70, PHOENIX, ARIZ. U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif. Bids June 11. CD 6/18, under LB.

Fisher Contg. Co., 2201 S. 19 Ave., Phoenix, Ariz. Contract Awarded. **$344,567**, concrete sidewalks, curbs, bit. surf. new subdivisions, PHOENIX, ARIZ. City, City Hall, Phoenix, Ariz. Bids Awarded June 18. CD 4/27.

† **Del E. Webb & San Xavier Constr. Co.**, Box 4066, Phoenix, Ariz. Low Bidder. **$835,558**, railroad relocation at Davis-Monthan Air Force Base, Eng. 04-353-51-109, TUCSON, ARIZ. U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif. Bids June 18.

† **Victor Bongberg**, Pamona, Calif. Low Bidder. **$235,871**. Power and signal electric circuits approx. 20 mi. Inv. No. 291-51-140, LAS VEGAS, NEV. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids June 14.

† **Dodge Constr. Co.**, N. Maine St., Fallon, Nev. Low Bidder. **$807,695**. Grading, paving, scientific structures, Area 7, ATS, Inv. No. 291-41-122, LAS VEGAS, NEV. U. S. Atomic Energy Comn., Las Vegas, Nev. Bids June 14.

▲† **Pacific Bridge Co.**, 333 Kearny St., San Francisco, Calif. Low Bidder. **$2,199,800**, est. $1,689,000. River channel slope protection, Columbia Basin Proj., Grand Coulee Dam, Spec. DC-3442 WASHINGTON. Bureau Reclamation, Dpt. Interior, Coulee Dam, Wash. Bids June 19. CD 5/31.

† **Industrial Electric Co.**, 1828 Yale Ave., Seattle, Wash. Contract Awarded, **$207,951**, est. $211,148. navigational aid bldgs., runway lighting, etc., at Larson Air Force Base. Inv. No. 51-10, MOSES LAKE, WASH. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids June 18. CD 6/4.

† **Peabody & Co., Inc.**, N. 44 St. and Stone Way Seattle 3, Wash. Contract Awarded. **$137,350**, est. $144,430. 98x144 ft. frame crash and structural fire station at Larson Air Force Base, MOSES LAKE, WASH. U. S. Eng. Bldg. 602 City-County Airport, Walla Walla, Wash. Bids June 19. CD 6/7.

Fiorito Bros., 1100 Leary Way, Seattle, Wash. Low Bidder, **$344,923**, 2,400 ft. runway exten. at Boeing Field, 200 ft. wide, SEATTLE, WASH. King Co., County-City Bldg. Seattle 4, Wash. Bids June 18. CD 6/4.

† **John H. Sellen Constr. Co.**, 228 9 Ave. N., Seattle, Wash. Contract Awarded. **$128,288**, est. $154,309 navigational aid bldgs., Inv. NO. ENG 51-185, McChord Air Force Base, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids June 15. CD 6/5.

† **John H. Sellen Constr. Co.**, 228 9 Ave. N., Seattle, Wash. Contract Awarded. **$145,171**, est. $156,977. Crash and fire STATION at McCord Air Force Base, Inv. No. 51-194, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids June 22.

(Continued on page 96)

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Nerve center of Charleston, West Virginia's busy Kanawha Airport, the architectural concrete Terminal Building is acclaimed as one of the handsomest and most efficient structures of its kind. View above shows building from airport apron side. Carved from rugged sandstone hills, runway and service building grading required movement of 9,100,000 cubic yards of rock and dirt. An idea of the size of the operation is given by the fact that on site now occupied by Terminal Building, there once rose a hill 50-feet higher than control tower. Architects for the building: Tucker & Silling, Charleston, West Virginia; Contractor: Kuhn Construction Co., Charleston, West Virginia.

Contractors of Kanawha Airport Terminal Building Report:

"Plywood Cuts Formwork Time and Labor Costs By Over 20 Per Cent"

ECONOMY, SPEED AND APPEARANCE of finished concrete. These constitute the three-way yardstick by which plywood's performance was measured in building the new Kanawha Airport Terminal Building.

Consider speed and economy. According to Charles J. Kuhn, president Kuhn Construction Co., contractors on the airport building, "Plywood speeded formwork operations all along the line . . . cut application time and labor costs by at least 20 per cent."

Consider appearance. Architects Tucker and Silling who specified plywood on the job because "the panels permit a smooth monolithic surface to be cast simultaneously with structure," report that concrete surfaces on the Terminal Building are "uniformly smooth and even-textured."

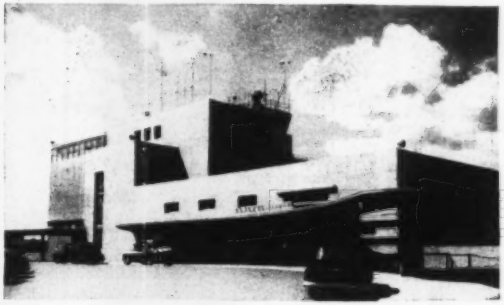
Conclusion? Simply this: Public building or industrial structure . . . apartment or heavy construction project—plywood forms do a *better* job, *faster*, *more economically*.

Douglas Fir

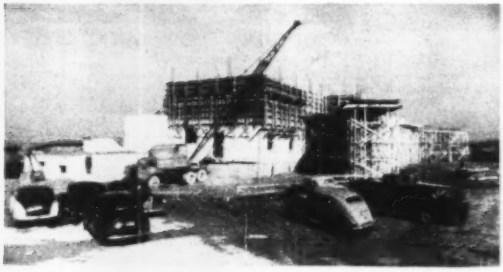
Plywood

AMERICA'S

Re-Use of Plywood Form Panels Helps Reduce Construction Costs



Passenger approach side view of Terminal Building shows pleasing functional design obtained by balancing vertical and horizontal masses. In addition to time and labor savings, re-use factor of plywood forms helped reduce construction costs on the job. Re-used to job completion, contractors report, plywood forms were still in good condition after last pour.



Construction view shows plywood forms in place. Form sections were built by placing ¾"-thick Exterior Concrete Form panels across studding. Forms were held in line with double 2"x4" wales, backed by double 2"x6" liners, placed vertically. After each use, plywood forms were cleaned, re-oiled and crane-erected into position for next pour. Note scaffolding at right which supports plywood canopy forms.

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(Continued from page 93)

† **R. A. Wattson Co.**, Hollywood, Calif. Low Bidder, $624,228, est. $622,300. Furnishing, installing addn. distr. mains for Lindsay-Strathmore Irrigation District, Friant-Kern Canal Distribution System, Central Valley Proj., Spec. DC-3414, CALIFORNIA. Bureau Recla-mation, Dpt. Interior, Lindsay, Calif. Bids June 19. CD 5/16.

CALIFORNIA—State Div. Hys., P. Wks., Bldg., Sacra-mento.

Chas. MacClosky Co., 112 Market St., San Francisco, Calif. Contract Awarded, $989,677. Widen steel truss bridge across San Luis Rey River, plant mix surf. approaches to entrance of Camp Pendleton, San Diego Co. Bids June 1. CD 6/7, under LB.

† **A. Teichert & Sons, Inc.**, 1848 37 St., Sacramento, Calif., Low Bidder, $104,375, bank protection at 3 Mile Slough at Sherman Island and levee setback and bank protection at Minor Slough Ryer Island, Spec. 1545, CALIFORNIA. U. S. Eng., R. Wright Bldg., Sacra-mento, Calif. Bids June 15. CD 5/7.

† **M. J. B. Constr. Co.**, Elks Bldg., Stockton, Calif., Low Bidder, $188,018. Alt. B, rehabilitation peri-meter road (range area), Inv. 51-1803, CAMP ROB-ERTS, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 19.

† **Oppenheim & King Constr. Co., Inc.**, P. O. Box 1902, Fresno, Calif. Contract Awarded, $934,729. Airfield facilities, ENG. 04-203-51-1045 at CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgom-ery St., San Francisco, Calif. Bids June 11. Awarded June 15. CD 6/19, under LB.

† **Johnson Western Constructors**, 2100 Wilmington-San Pedro Rd., San Pedro, Calif. Contract Awarded, $138,888, replace piling and repair waterfront at Amphibious Base—Spec. 26743, CORONADO, CALIF. P. Wks. Eleventh Naval Dist., San Diego, Calif. Bids June 12, awarded June 15.

The Contracting Eng. Co., Inc., 2410½ W. Vernon St., Los Angeles, Calif. Low Bidder, $169,600, est. $110,000, underground vault and 300,000 gal. water storage tank at Los Angeles, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 19.

† **Electro Constr. Co.**, 122 N. Larchmont St., Los Ange-les, Calif., Low Bidder, $96,966, airfield lighting and substation, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 18.

† **U. S. Eng.**, 751 S. Figueroa St., Los Angeles, Calif., rejected bids Apr. 19 control tower at Edwards Air Force Base, ENG. 04-353-51-54, MUROC, CALIF., L. B. $274,975. CD 4-25, under LB.

† **Fredrickson & Kosler**, 212-214 13 St., Sacramento, Calif., Low Bidder, $620,357. Runways, taxiways and aprons at Oxnard Air Force Base, ENG 04-353-15-87 OXNARD, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 18.

† **Chagnon Electric Co.**, 450 E. Bonita St., Baldwin Park, Calif., Low Bidder, $118,047, est. $150,000, rehabilitation electric sys. and street lights at Camp San Luis Obispo, ENG. 04-354-51-108, SAN LUIS OBISPO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho, Contract Awarded, Approx. $3,000,000, elemental phosphorus PLANT, incl. laboratory, power, blast furnace processing plant, SODA SPRINGS, IDAHO. Mon-santo Chemical Co., 1700 S. Second St., St. Louis, Mo. The H. K. Ferguson Co., 1783 E. 11 St., Cleve-land, O., engr. (Correction—engineer). CD 6/18, under CA.

Wes Meyer Constr. Co., 300 E. Polk St., Phoenix, Ariz., Contract Awarded, $647,443, Mesa Junior High SCHOOL, MESA, ARIZ. Mesa School System, Mesa, Ariz. Awarded June 16. CD 3/16/50.

Walker Bourlwin Constr. Co., 623 E. Fourth St., Reno, Nev., Low Bidder, $719,935, est., $550,000, 4 story, basic steel concrete MASONIC TEMPLE, W. First St., RENO, NEV. Masonic Building Assn., Masonic Temple, Reno, Nev. Bids June 12. CD 6/11.

A. R. Nieman, Vancouver, Wash., Low Bidder, $524,245, General contract 137x324 ft. rein.-con. AUDITORIUM and GYMNASIUM at High SCHOOL, KENEWICK, WASH. School Dist. 17, Kenewick, Wash. Bids June 19. CD 6/12.

Malarkey & Moore, 9218 S. W. 17 St., Portland, Ore., Contract Awarded, $879,600, 125 HOUSING units, management unit, maintenance unit, streets, sewers, water system, etc., KENEWICK, WASH. Kenewick Housing Auth., 6 Ave. and Auburn St., Kenewick, Wash. Bids June 19. CD 6/25, under LB.

Guy E. Hall, P. O. Box 1724, Bakersfield, Calif., Contract Awarded, $699,174, 64,000 sq. ft. Junior High SCHOOL, Bell Terrace and P St., BAKERSFIELD, CALIF. Bakersfield City School Dist., 1611 K St., Bakersfield, Calif. Bids June 14. CD 5/28.

Guy E. Hall, 310-30 St., Bakersfield, Calif., Low Bidder, $595,218, Junior High SCHOOL at Bell Terrace and P St., BAKERSFIELD, CA. Bakersfield City School Dist., 1600 K St., Bakersfield, Calif. Bids June 14. CD 5/31.

Empire Steel Bldgs. Co., 2137 Marcana St., Los Ange-les, Calif., Contract Awarded, $135,000, two metal ASSEMBLY BLDGS., CULVER CITY, CALIF. Hughes Aircraft Co., 11900 Florence Ave., Culver City, Calif.

South Coast Constr. Co., 230-70 St., Newport Beach, Calif., Low Bidder, $312,726, 2 story, rein.-con. brick, Fullerton HIGH SCHOOL addn., FULLERTON, CALIF. Fullerton High School Dist., 200 E. Chapman Ave., Fullerton, Calif. Bids June 14. CD 5/25.

Coordinated Constr. Co., 8307 Hindry Ave., Los Angeles, Calif., Contract Awarded, $500,000, 1 and 2 story brick AIRCRAFT PARTS MFG. BUILDING, reinforced brick ELECTRONICS MFG. BUILDING, HAWTHORNE, CALIF., Irving P. Crowell, 830 Hinon Ave., Los Angeles, Calif. Witherly & Novikoff, 7102 Crenshaw St., Los Angeles, Calif., engrs.

L. E. Dixon Co., 409 S. California St., San Gabriel, Calif., Low Bidder, $525,445, 2 story, rein.-con., 35,000 sq. ft. CLASSROOM at San Fernando High School, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 W. San Pedro St., Los Angeles, Calif. Bids June 20.

Halden-Lee Corp., 1011 Aviation Bldg., Los Angeles, Calif., Owner Builds, $180,000, concrete MANUFAC-TURING BLDG., LOS ANGELES, CALIF. Edmund Feldman, engr., and S. Charles Lee, archt., both at 10100 Aviation Bl., Los Angeles, Calif.

Morley Bldg. Co., 407 Commercial Center St., Beverly Hills, Calif., Low Bidder, $162,480, POWER HOUSE addn.; **Smith Eng. Co.** and **O. W. Karn**, 3406 W. Washington Blvd., Los Angeles, Calif., $88,753, two incinerators, both at General Hospital, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 19. CD 5/29.

Paul W. Speer, 4201 Sunset Blvd., Los Angeles, Calif., Low Bidder, $319,800, 2 story, rein.-con. County Art INSTITUTE, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 19. CD 6/6.

Graham & Jensen, 1634 M. St., Merced, Calif., Low Bidder, $409,043, John Adams SCHOOL, MADERA, CALIF. Madera Elementary School Dist., Madera, Calif. Chas. D. James, Brammer Bldg., Madera, Calif., archt. CD 2-2-48.

R. J. Erwin, 317 W. 8 St., Los Angeles, Calif., Con-tract Awarded, $590,200, 70 frame stucco DWEL-LINGS on Tonihar, Leffingwell and Tolley Sts., NORWALK, CALIF. Airport Acres Inc., 307 W. 8 St., Los Angeles, Calif. Wm. Bray, 5670 Wilshire Blvd., Los Angeles, Calif., archt.

Johnson, Drake & Piper, 9009 San Leandro St., Oakland, Calif., Contract Awarded, $639,345, General Constr. PHYSICAL EDUCATION BLDG. and Other BLDGS. at Calif. Vocational Institution, near TRACY, CALIF. State Div. of Architecture, P. Wks. Bldg., Sacra-mento, Calif. Bids June 5, awarded June 15. CD 6/14, under LB.

Sooy & Jackson, 508 N. First St., Redlands, Calif., Low Bidder, $472,900, new Junior High SCHOOL, YUCAI-PA, CALIF. Redlands School Dist., Redlands, Calif. Bids June 16.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—OUTSIDE UTILITIES—B.A. 7/17—U. S. Eng., New Washington Hotel, Seattle 1, Wash., out-side utilities, Phase B, Eielson Air Force Base, Inv. No. 595-507-51-105. Plans deposit $50. Extended date, CD 6/12.

† **Alaska**—OUTSIDE UTILITIES—B.A. 7/24—U. S. Eng., New Washington Hotel, Seattle 1, Wash., out-side utilities, Ladd Air Force Base, Inv. No. 595-5-07-125. Plans deposit $25. Extended date, CD 6/12.

LOW BIDS AND CONTRACTS

† **Alaska, Kenai**—COMMUNICATIONS STATION—B.A. 7/18—U. S. Eng., Flamingo Room, New Washington Hotel, Seattle, Wash. (Alaska Dist.), army communica-tions station, 595-507-51-102. CD 11/27/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Adlou Constr. Co.**, Fairbanks, Alaska, Low Bidder, $519,519, est. $422,105, REFRIGERATED WARE-HOUSE Inv. No. 51-75 at Eielson Air Force Base, ALASKA. U. S. Eng., NAPO, 917 c/o PM, Seattle, Wash. Anchorage, Alaska. Bids June 19. CD 5/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, Low Bidder, $2,763,000, est. $2,347,000, POWER and HEATING PLANT, ANCHORAGE, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids June 15. CD 6/4.

E. & E. Apartment Co., Lowman Bldg., Seattle, Wash. Day Labor. Approx. $500,000, 84 unit APARTMENT, ANCHORAGE, ALASKA.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

N. S., Greenwood—GENERATING UNITS—B.A. 7/17—P. J. Mangan, engr., c/o Defence Constr. Co. Ltd., 1032 Gottingen St., Halifax, N. S., design, supply, erecting 4 bit, burning steam generating units, Approx. $175,000. Plans deposit $50.

BIDS ASKED—BUILDINGS

Ont., Peterborough—SCHOOL—B.A. 7/12—Peterborough Bd. Educ., 24b Rubidge St., 2 story, 63x250 ft., high school, $585,000. Plans deposit $25. John B. Parkin Assoc., 717 Church St., Toronto, archts. CD 12/11/50.

▲ **Alta., Edmonton**—COMMUNICATIONS CENTRE—B.A. 7/13—Rule, Wynn & Rule, archts., 11422 Jasper Ave., 6 story, bsmnt., sub-bsmt., 125x150 ft., rein.-con., telephone communications centre for provincial government, for Province of Alberta, Government Bldgs., Edmonton, Alta. Approx. $1,300,-000. Plans deposit $100.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Dawson, Wade & Co., Ltd., 775 Clark Dr., Vancouver, B. C., Contract Awarded, $628,724, reconstr. 7.23 mi. Trans-Canada Hy.-Golden-Yoho National Park Boundary, BRITISH COLUMBIA, Province of B. C., Parliament Bldgs., Victoria, B. C. Bids May 22. CD 5/28, under LB.

▲ **Acadia Constr. Co. Ltd.**, Dufferin St., Bridgewater, N. S., Contract Awarded, Approx. $4,000,000, constr. at "S" location of Radar Screen Group, location withheld, NOVA SCOTIA. Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S. J. P. Mangan, c/o owner, engr.

Tomlinson Bros. Ltd., Public Utilities Bldg., Port Arthur, Tex., Contract Awarded, $127,437, road paving and road work paving 3 streets, PORT ARTHUR, ONT. City, A. H. Evans, clk., City Hall, Port Arthur, Tex. Awarded June 18. CD 6/18.

Municipality, Sarnia, Ont., Day Labor, $50,000 water-mains and house services, SARNIA, ONT. CD 1/24/47.

BUILDINGS

LOW BIDS AND CONTRACTS

Continental Constr. Ltd., Lethbridge, Alta., Contract Awarded, $148,353, Div. 12, Contr. 1, about 11 mi. south and 4 mi. east of Burdett, constr. single barrelled continuous wood stave pipe siphon 9 ft. in diam. and 2200 ft. long, one concrete check and 1500 ft. 24 ft. bed width canal, ALBERTA, Province of Alberta (Water Resources Branch), Ed-monton, Alta. Bids May 31, awarded June 11. CD 5/11.

E. R. Taylor Constr. Co. Ltd., 5699 Hudson St., Van-couver, B. C., Contract Awarded, $397,926, asph. paving streets, c. conc. curb and gutter, installing tile drain behind curbs at Proj. 6-N-3, Fraser View Housing development, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Van-couver, B. C. J. L. Adams, 360 Homer St., Van-couver, engr. Awarded June 12.

Dominion Bridge Co. Ltd., Lachine, Que., Contract Awarded, Approx. $125,000, two steam generating units and auxiliary equip., CAMP SHILO, MAN. De-fence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. D. W. Lair, c/o owner, engr.

Bennett & White Constr. Co. Ltd., 660 Howe St., Van-couver, B. C., Contract Awarded, $467,700, 2 story, rein.-con., frame, concrete block, administration sec-tion and trade shops bldg., incl. power house, CHILLI-WACK, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. J. L. Adams, 360 Homer St., Vancouver, B. C., engr. Awarded June 16.

Model Homes Ltd., 7 McGregor St., Winnipeg, Man., Owner builds, $450,000, APARTMENT DWELLINGS, Church Ave., WINNIPEG, MAN.

E.G.M. Cape & Co. Ltd., 620 Cathcart St., Montreal, Que., Contract Awarded, Approx. $100,000, 50,000 sq. ft. concrete, brick, masonry PLANT addn., BELLE-VILLE, ONT. Northern Electric Co. Ltd., 1600 Notre Dame St., Montreal, Que.

F. W. Dakin & Co. Ltd., 1405 Peel St., Montreal, Que., Contract Awarded, $190,000, 1 story, 200x210 ft. concrete, structural steel, brick PLANT, MONT-REAL, QUE. F. W. Horner, Ltd., 950 S. Urban St., Montreal, Que. R. J. Desjardins, 3674 Hochelaga St., Montreal, Que., archt.

J. S. Hewson Ltd., 4424 W. Ste. Catherine Ste., Mont-real, Que., Contract awarded, $400,000, 2 story, bsmnt., 109x122 ft., rein.-con., brick TELEPHONE EXCHANGE, MONTREAL, QUE. Bell Telephone Co., 1050 Beaver Hall Hill, Montreal, Que. Barrott & Assocs., Canada Cement Bldg., Montreal, Que., archts.

▲ **Pigott Constr. Co. Ltd.**, Saskatoon, Sask., Contract Awarded, Approx. $2,780,000, various BUILDINGS at Camp, MOOSE JAW, SASK. Defence Constr. Co., Winnipeg, Man.

PROPOSED PROJECTS

WATER SUPPLY

Fla., Miami Beach—City, voted bonds, WW imprvs., $650,000. CD 5/25.

Kan., Augusta—City, Martha Schultz, clk., defeated $147,000 bonds June 7, water treatment plant. CD 6/5.

O., Laurelville—Village, L. A. McClelland, mayor, WW and reservoir.

Okla., Carter Park—Town, voted bonds, water sys., $150,000. C. B. Carroll, Carter Park, consult. engr.

Okla., Tahlequah—City, voted $100,000 bonds, WW extens., Hudgins, Thompson & Ball, 1104½ W. Main St., Oklahoma City, consult. engrs.

W. Va., Phillippi—City, City Hall, 750,000 gal. GPD filtration plant, $125,000. Blundon Snyder-Small, keyser, consult. engr.

SEWERS, WASTE DISPOSAL

Calif., Folsom—City, City Hall, voted bonds, sewage disposal plant, $142,000.

Fla., Miami Beach—City, voted bonds, sanitary sewer imprvs., $750,000. CD 5/25.

Fla., Okeechobee—City, sanitary sewer imprvs., $200,-000-$300,000. Briley & Wild & Assocs., N. Olive St., Daytona Beach, consult. engrs.

Ill., Sesser—City, City Hall, sewage treatment works modification. $115,000. Roy Vineyard, Benton, Ill., consult. engr.

▲ Mich., Bay City—City, George MacPhail, mgr., sewage disposal plant, interceptor sewers, 10 mi. long, diversion chambers, river crossing, etc., $5,000,000. Francis Eng. Co., 303 Eddy Bldg., Saginaw, engr.

Mo., Kirkwood (St. Louis 22, P.O.)—City, Wm. C. Mason, clk., 139 S. Kirkwood Rd., voted bonds June 12, exten., emprv. sanitary sewerage sys., $254,000, exten., imprv. water distr. sys., $21,000. CD 5/28.

▲ O., Toledo—City, Arnold V. Finch, mgr., secondary sewage disposal plant, $10,000,000. Voters will decide bond issue at Oct. 2 primary election. Jones, Henry & Schoenmaker, Security Bldg., Toledo, consult. engrs. John H. Davis, city comr. of engr. CD 10/17/46.

▲ Okla., Enid—City, defeated $1,850,000 bonds, sewage disposal plant. CD 5/25.

R. I., Jamestown—Town Sewer Comn., Town Hall, sewage disposal sys., $75,000. Gardner C. Easton, 10 Branford Ave., Newport, engr.

Tex., Haltom City—City, C. S. Walker, mayor, City Hall, $900,000 bond election June 23, sewage disposal sys. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 1/22.

Tex., Nocona—City, voted $100,000 bonds June 11, sanitary sewerage sys., expansion incl. disposal plant.

Wash., Bellevue—Bellevue Sewer Dist., Bellevue, sewerage sys. and disposal plant. $545,000. Carey & Kramer, 19191 Ave., Seattle, Zone 1, consult. engrs.

BRIDGES

▲ Fla., Miami Beach—City, voted bonds, bridges. $1,843,000. CD 5/25.

Fla., Miami Beach—City, voted bonds, street paving. $609,000. CD 5/25.

STREETS AND ROADS

Ala., Mobile—Mobile Co., paving Celeste Rd. from Hy. 43 to Turnerville. $100,000. J. B. Converse & Co., First Federal Savings Bldg., consult. engrs.

Ind., Fort Wayne—City, Henry E. Branning, mayor, repair, asph., resurf. portions Spring, Harrison, John, East Wayne and Calhoun Sts., Fairfield Ave., State Blvd. $229,210; rebuild portions of c. conc. State, Rudisill, Anthony, and State Blvds., $383,768.

Alberta—Govt. of Canada, Dpt. Resources & Development, Ottawa, Ont.

Jasper—hard surf. roads in Jasper National Park, $569,000 voted.

Banff—hard surf. roads in Banff National Park, $400,000 voted.

British Columbia—Govt. of Canada, Dpt. Resources & Development, Ottawa, Ont.

Kootenay Bay—hard surf. roads in Kootenay National Park, $831,000 voted.

Prince Edward Island—Govt. of Canada, Dpt. Resources & Development, Ottawa, Ont.

Summerside—hard surf. roads in Prince Edward Island National Park, $110,000 voted.

Ont., Lindsay—Town, Municipal Bldg., Lindsay, paving Main St. for 2 miles, $250,000.

AIRPORTS

† Me., Presque Isle—AIRPORT IMPRVS.—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., addnl. paved areas, 1,000 ft. graded over-run on runway navigational aids, repairing bldgs., Air Force Base. $800,000.

Mo., St. Louis—HANGAR—City, Frank J. McDevitt, pres., Bd. Pub. Service, 305 City Hall, Zone 3, 110x200 ft. steel hangar at Lambert-St. Louis Municipal Airport, Robertson, Ozark Airlines, Inc., lessee. CD 7/14/48.

▲ O., Toledo—AIRPORT—City, $2,800,000 bond election Oct. 2, Class IV airport, Over $5,000,000. CD 1/24.

PUBLIC BUILDINGS

Ala., Alexander City—HOUSING—Alexander Housing Auth., Alexander City, Ala., housing units. $300,000.

Ala., Bessemer—City plans by W. C. Douglas, 2922 7 Ave. South, Birmingham, Jonesboro Elementary School, Roosevelt Park Elementary School and Bessemer Elementary-Junior High School, $300,000 each. CD 5/1.

Calif., Azusa—SCHOOL—Azusa City School Dist., 340 W. 5 St., plans by Kistner, Curtis & Wright, 816 W. 5 St., 1 story, frame, stucco Longfellow School addns. $300,000. CD 10/9/50.

Calif., East Whittier—SCHOOL—East Whittier School Dist., 14421 E. Whittier Blvd., plans by R. L. Warren, 8323 S. LaBajada Ave., 4 frame, stucco East Whittier Junior High School bldgs. $300,000.

Calif., El Monte—SCHOOL—El Monte School Dist., 200 E. Columbia St., plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, 1 story, frame, stucco 44,000 sq ft., Rio Hondo School, $300,000.

Calif., Garden Grove—SCHOOL—Garden Grove School Dist., 11262 E. Garden Grove Blvd., plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, 1 story, frame, stucco new Hope School addns. $300,000.

Calif., Gilroy—SCHOOLS—Gilroy Elementary School Dist., Gilroy, voted $175,000 bonds, elementary schools. $633,515, Falk & Booth, 9 Main St., San Francisco, archts. CD 5/16.

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Calif., Los Nietos—SCHOOL BLDGS.—Los Nietos School Dist., 11425 E. Rivera Rd., plans by W. H. Harrison, 816 W. 5 St., Los Angeles, 4 frame, stucco Ranchos Los Gertrudes School bldgs. $300,000.

▲ **Conn., Darien**—SCHOOL—Town, S. M. Marland, supt., plans by Ketchum, Gina & Sharpe, 227 E. 44 St., New York, N. Y., Junior High School addn., Hollow Tree Ridge Rd. $1,000,000. CD 6/8.

Conn., Hartford—LIBRARY—City, plans by Schutze & Goodwin, 12 Haynes St., Hartford, public library. CD 5/15.

Fla., Miami Beach—POLICE—City, voted bonds, police bldg. $300,000. CD 5/28.

Ga., Augusta—SCHOOL—Richmond Co. Bd. Educ., Augusta, Wheless Road School, $412,000.

Ia., Des Moines—SCHOOL—Bd. Educ., 629 3 St., Des Moines, plans by Wetherell & Harrison, 506 Shops Bldg., Des Moines, Junior High School, $900,000. CD 2/1/45.

Kan., DeSota—SCHOOL—School Dist. 31, school, $500,000.

Kan., Phillipsburg—SCHOOL—School Dist. 3, Mrs. Doris Hahn, clk., voted $398,000 bonds, elementary school, impry. existing schools.

Kan., Wichita—SCHOOL—Bd. Educ., Wichita, plans by Thomas & Harris, 321 W. 2 St., Minneha School addn. $300,000. CD 4/12.

Mich., Dearborn—SCHOOL—City, Bd. Educ., plans by Bennett & Straight, 15624 Michigan Ave., brick, steel, concrete Salina School, $350,000. CD 12/2.

▲ **N. J., Port Newark**—CARGO TERMINAL, etc.—Port of New York Auth., 111 8 Ave., New York, N. Y. 200x560 ft. Cargo Terminal bldg. No. 140, 200x460 ft., cargo, terminal bldg. No. 141 and 560 ft. long wharf in front of bldg., east of Export St.; 50x565 ft. concrete deck open wharf east of Export St., Approx. $5,000,000.

▲ **O., East Liverpool**—SCHOOLS—Bd. Educ., W. C. Fodyce, supt., bond election Nov. 6, two Junior High Schools and grade school, $2,650,000. CD 11/12/47.

O., Springboro—SCHOOL—Bd. Educ., Clearcreek School Dist., Springboro, voted bonds, June 12, school addn. $360,000. CD 7/24/50.

Pa., Waynesburg—SCHOOL—School Dist. of East Franklin Twp., Waynesburg, plans by C. Gary Dickson, 22 Main St., Washington, 1 story, bsmnt. 45x70 ft., brick school addn. $350,000.

Pa., Westover—SCHOOL—Harmony Joint School Dist., Westover, plans by Hunter Caldwell & Campbell, Du Bois, brick, tile Junior-Senior High School, $446,580.

▲ **R. I., Lincoln**—SCHOOL—Town, Supt. Schools, plans by Jencks & Ballou, 2600 Industrial Trust Bldg., Providence, Junior High School. $1,070,000. CD 1/13/50.

S. C., Clover—HOUSING—Clover Housing Auth., Clover, 46 housing units, $450,000.

S. C., York—HOUSING—York Housing Auth., 52 housing units, $500,000.

Tenn., Union City—FACTORY—Municipality, 1 story tubular seat frame factory for American Metal Products Co., Detroit, Mich. $800,000.

▲ **Tex., Dallas**—SCHOOL—Dallas Independent School Dist., Hillcrest High School addn., $884,000; Pease Elementary School, $571,000. CD 10/20/50.

Tex., Seminole—HOSPITAL—Gaines Co., Court House, voted $425,000 bonds June 11, county hospital and renovating existing county hospital at Seagraves.

▲ **Tex., Waco**—HOUSING—Waco Housing Auth., Waco, plans by G. Van Maltsberger, assoc archt., 2013 Bellknap St., San Antonio and Wm. McPherson, 114 Princess Pass, San Antonio, Tex., 150-unit low-cost brick veneer housing $1,125,000. R. S. Marvin Shipman, 146 W. Olmos Dr., San Antonio, Tex., consult. engr. CD 9/23/49.

Wis., Madison—SCHOOL—Bd. Educ., 351 W. Wilson St., plans by Law, Law, Potter & Nystrom, 121 S. Pickney St., 1 story each two wings 63x200 ft. Harding Grade School, 1 story, 60x300 ft. central section.

▲ **Wis., Mendota**—HOSPITAL—State Dpt. P. Welfare, 128 S. State Capitol, Madison, plans by Brust & Brust, 135 W. Wells St., Milwaukee 3, state hospital addn. $2,500,000. CD 3/6/44.

Alaska, Haines—SCHOOL—School Bd., Haines, plans by Johnson & Botesch, First Natl. Bank Bldg. Everett, Wash., 1 story concrete high school addn. $300,000.

▲ **Alaska, Palmer**—SCHOOL—School Bd., Palmer, plans by W. A. Johnson & Assocs., First Natl. Bank Bldg., Everett, Wash., high school, $1,000,000. CD 11/14/50.

Alaska, Wrangell—SCHOOL—School Bd., Wrangell, plans by Johnson & Botesch, First Natl. Bank Bldg., Everett, Wash., concrete, frame school addn., $300,000. CD 2/28, under LB.

Ont., Cassleman—HIGH SCHOOL—Prescott & Cambridge Twps., Casselman, high school. Approx. $400,000.

Ont., Cooksville—SCHOOL—South Peel High School Area Bd., T. H. Barrett, chn., Port Credit, plans by S. B. Coon & Son, Ltd., 4 St. Thomas St., Toronto, high school, Centre Rd., north of Dundas Hy. Approx. $390,000. CD 5/26/49.

▲ **Ont., London**—DEPOT—S. M. Connolly engr., Defence Constr. Ltd., 441 Queens Quay W., Toronto, 25 B, Ont., frame, masonry Ordnance Depot Development on Highbury Ave. $1,500,000.

▲ **Ont., Long Branch (Postal Dist. Toronto)**—HOUSES—Govt. of Canada, Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, 2,000 low priced rental homes on 350 acre site on a former Long Branch Rifle Range, $5,000,000.

Ont., St. Catherines—HOME—City, H.H. Smith, clk., plans R. I. Macbeth, consult. archt., 104 Queen St., 125-bed HOME for Aged. Approx. $650,000. CD 11/30/50.

Ont., Toronto—MEDICAL CENTER—University of Toronto, Queen's Park, Toronto, plans by Mathers & Haldenby, 15 St. May St., 6 story, bsmnt., new Charles H. Best Medical Center, $700,000. Wallace Caruthers & Assoc., 35 Isabella St., and H. H. Angus & Assocs., 615 Yonge St., consult. engrs. CD 12/5/50.

Que., Repentigny—SCHOOL—School Comm., P. E. Deschamps, secy., plans by R. Dumais, 3995 Sherbrooke St. E., Montreal, Que., 10 classroom school and residence, Approx. $300,000.

▲ **Que., Sweetsburg**—HOSPITAL—Brome Hospital Bd., c/o Dr. P. E. Roy, Sweetsburg, plans by J. J. Turcotte, 1010 W. Ste. Catherine St., Montreal, hospital, $450,000. CD 6/13.

COMMERCIAL BUILDINGS

Ind., Indianapolis—HOTEL—Mr. and Mrs. Charles D. Watson, Marott Hotel, remodeling Marott Hotel, Fall Creek and Meridian Sts. $500,000.

Ia., Sioux City—HOSPITAL—St. Vincent Hospital, Sister Mary Raphael, chn. Bldg. Comm., 724 Jones St., plans by John Latenser & Sons, 1307 Farnan St., Omaha, Neb., 4 story, bsmnt., 48x132 ft., brick, steel, concrete, stone hospital addn., also 1 story wing for new entrance connecting to present bldg. $800,000.

▲ **Kan., Baldwin City**—BUILDINGS—Baker University, Redevelopment Comm., Dr. Nelson P. Horn, pres., Baldwin City, auditorium and new buildings. $3,000,000.

▲ **Kan., Topeka**—DEPARTMENT STORE—Crosby Bros., 719 Kansas Ave., department store addn. $2,000,000.

Me., Augusta—TELEPHONE—New England Telephone & Telegraph Co., 50 Oliver St., Boston, Mass., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, 2 story, brick, concrete telephone bldg. $400,000.

Mich., Frankentrost—CHURCH—Emmanuel Lutheran Parish, Frankentrost, plans by Merritt & Cole, 7376 Grand River St., Detroit, 1 story, bsmnt., brick, stone church, $300,000.

▲ **Mich., Ypsilanti**—DORMITORIES—Cleary Business College, Ypsilanti, 2 dormitories, cafeteria, main classroom, auditorium, admin. bldg., Washtenaw Rd., west of city limits. $1,000,000.

Mo., Pagedale (St. Louis 14, P. O.)—CHURCH— St. Catherine of Sienna Parish, Rev. John S. Lyons, pastor, 6901 Page Ave., plans by Carroll & Dean, 5473 Delmar Blvd., St. Louis, Zone 12, 2 story, bsmnt., brick, steel, concrete church and rectory.

Pa., Loretto—SEMINARY—St. Francis College, Loretto, plans by Wm. York Cocken, 800 Century Bldg., Pittsburgh, Pa. 3 story, bsmnt., brick, limestone seminary, $850,000.

S. C. Florence—DAIRY—Coble Dairy Products, Inc., Fairgrounds St., Columbia, dairy addn., $100,000.

Tex., Sherman—BANK—Merchants & Planter National Bank, Sherman, masonry bank remodeling addn. $490,000.

Alta., Edmonton—RESTAURANT, etc.—Jim Louis, 10525 Jasper Ave., plans by Dewar, Stevenson & Stanley, 618 Northern Hardware Bldg., 2 story, concrete block, masonry restaurant office bldg., 10535 Jasper Ave. Approx. $300,000. CD 5/8.

▲ **Man., St. Boniface**—HOSPITAL WING—Bd. Governors, St. Boniface Hospital, St. Boniface, plans by Green, Blankstein & Russell, Time Bldg., Winnipeg, 8 story south wing hospital addn. $3,000,000. CD 6/7.

INDUSTRIAL BUILDINGS

Ala., Decatur—PLANT—Farm Industries, Inc., Decatur, rebuild plant, $100,000.

▲ **Calif., San Leandro**—PLANT — Crown-Willamette Paper Div., Crown Zellerbach Corp., 343 Sansome St., San Francisco, paper processing plant, West Ave. and Merced St. $3,000,000.

Conn., Newington—PLANT—Fafnir Bearing Co., S. M. Cooper, pres., New Britain, plant, 50 acre site, westerly from Willard Ave.

▲ **Conn., Windsor Locks**—PLANT—Kaman Aircraft Corp., Bradley Field, helicopter plant, North Bloomfield site. $3,900,000.

▲ **Fla., Pensacola**—PLANT — Chemstrand Corp., c/o Monsanto Chemical Co., 1700 S. 2 St., St. Louis, Mo., nylon plant on 2,000 acre tract on Escambia River, $20,000,000.

▲ **Ga., Rome**—MILL—Mead Corp., 118 W. 1 St., Dayton, O., paper mill for Kraft Container Bd. on 700 acre tract. $21,000,000.

Ino., Marion—PLANT—Osborn Paper Co., Twelfth and Washington Sts., rebuilding Lincoln Blvd. Plant, $200,000.

Ind., Michigan City—PLANT STRUCTURES—Northern Indiana Steel Supply Co., plans by Lawrence Amstadter, 111 W. Washington St., Chicago, 3, Ill., 40,000 sq. ft. plant structure. $400,000.

▲ **Ind., North Madison**—PLANT—General Electric Co., R. C. Stuart, exec. vice pres., Bloomfield, N. J., 2 brick, steel lamp and glass factory bldgs.; 1 story glass factory, on 70 acre site, U. S. Road 421 and State Rd. 107, $2,000,000. Austin & Co., 16112 Euclid Ave., Cleveland, O., consult. engrs. and archts.

Ind., Rushville—FACTORY—New Castle Products, Inc., New Castle, 1 story, concrete block, steel factory, $350,000.

▲ **Ind., Southport**—WAREHOUSE—Eli Lilly & Co., 740 S. Alabama St., Indianapolis, warehouse to be known as Medical Materials Center on 123 acre site southeast of here along Pennsylvania R.R. right-of-way. $1,000,000.

Ky., Carrollton—WAREHOUSE—Golden Burley & Warehouse Co., Carrollton, rebuild warehouse, $100,000.

La., New Orleans—PLANT—Chrysler Corp., Richards Bldg., plant for testing tank engines, $300,000. Geo. A. Heft & Co., 820 Union St., consult engrs.

▲ **Neb., Omaha**—STORAGE PLANT—United States Cold Storage Corp., 2055 W. Pershing St., Chicago, Ill., cold storage plant. $1,380,000. A. Epstein, 2011 W. Pershing St., Chicago, Ill., archt. and engr. CD 1/24.

▲ **N. Y., Hicksville**—PLANT—Amperex Electronic Corp., 25 Washington St., Brooklyn, Zone 1, plans by Frank S. Parker & Assoc., 256 E. 49 St., New York, 17, N. Y., mfg. plant on 7 acre tract on Duffy Ave. $1,000,000.

▲ **N. Y., Syracuse**—FACTORY—General Motors Corp., Brown-Lipe-Chapin Div. General Motors Bldg., Detroit, Mich., 400,000 sq. ft. factory on 100 acre tract. $8,000,000. Argonaut Realty Co., General Motors Bldg., Detroit, Mich., consult. engr.

O., Elyria—FACTORY—G. E. Brown Lipe Chapin Div., General Motors Corp., Elyria, O. 175,000 sq. ft. factory.

O., Maple Heights—FACTORY—Ohio Electric Mfg. Co., 5900 Maurice Ave., S. E., Cleveland, 35,000 sq ft. factory.

▲ **Okla., Elk City**—PLANT—Continental Oil Co. & Assocs., Oil and Gas Bldg., Houston, Tex., processing and gas plant, $1,750,000.

S. C., Greenwood—FREIGHT DEPOT—Southern Railway System, J. B. Akers, ch. engr., P.O. Box 1808, Wash. 13, D. C., freight depot. $100,000.

Tex., Amarillo—SHOP—J. Ernest Stroud & Co., Amarillo, reconstr. metal welding shop. $225,000.

Wis., Milwaukee—PLANT—Globe-Union Inc., 900 E. Keefe Ave., Zone 12, plans by Geo. Schley & Son, 1922 E. Capitol Dr., Zone 11, first unit, 100,000 sq. ft. mfg. plant.

Wis., Tomah—FACTORY—Vanant Products Co., Tomah, plans by H. J. Lenschow, Tomah, factory bldgs. $125,000.

Wis., Watertown—FACTORY, etc.—Perfex Corp., 500 W. Oklahoma Ave., Milwaukee, Zone 7, 100,000 sq. ft. factory bldgs. and power plant.

▲ **Alta., Medicine Hat**—POWER PLANT—Calgary Power Co., Ltd., Calgary, steam power plant, $3,000,000.

▲ **Alta., Yates**—MILL—North Western Pulp & Power Ltd., 436 Lougheed Bldg., Calgary, pulp and paper mill, 123 mi. west of Edmonton. $3,500,000.

B. C., Victoria—PLANT—British Columbia Forests Products Ltd., 355 Garbally, Victoria, plywood plant. Approx. $300,000.

▲ **Ont., Sault Ste. Marie**—PLANT—Sault Ste. Marie Structural Steel Co. Ltd., Wilde St., plant, Approx. $1,750,600. CD 6/4.

▲ **Ont., Toronto**—PLANT—Mall Tool Ltd., Queen Elizabeth Way and Taymall Rd., Etobicoke, Toronto, plans by B. P. Templin, 5 Castle Frank Crec, 2 story, 120x200 ft. manufacturing plant and 2 story, 35x120 ft. office wing, separate storage and boiler house second plant unit, 2 story, 20x189 ft. $1,000,000.

▲ **Que., Lachute**—PLANT EXPANSION—Canadian Refractories Ltd., N. Pitts, pres., Canada Cement Bldg., Montreal, Kilmer Plant expansion program, new headframe, install hoisting sys., deepen shaft, exten. mine, at Kilmer plant. $1,000,000; new modern plant, in Argenteuil Co., Approx. $3,500,000.

UNCLASSIFIED

▲ **Colorado**—RURAL DISTRIBUTION LINES—San Luis Valley Rural Electric Corp., Monte Vista, 75 mi. rural distr. lines, 53 mi. transmission lines, 38 mi. tie lines and completion previously approved construction Alamosa Co., $1,110,000. G. W. Robertson, c/o owner, company engr. Carl Cox, Barfield Bldg., Amarillo, Tex., consult. engr. CD 6/20/46.

Fla., Miami Beach—PARK IMPRVS.—City voted bonds, park imprvs., $850,000; grandstand at Flamingo Park, $300,000. CD 5/25.

† **N. M., Las Cruces**—STORAGE MAGAZINES—U. S. Eng., P. O. Box 1538, Albuquerque, ammunition storage magazines and liquid propellant storage. $475,000.

▲ **North Carolina**—RURAL DISTRIBUTION LINES—Piedmont Electric Membership Corp., Hillsboro, 431 mi. rural distr. lines, 19 mi. transmission line, sys. imprvs., Person Co. $1,680,000. CD 4/6/49.

Mo., Kirkwood (St. Louis 22, P.O.)—ELECTRIC DISTRIBUTION SYS.—City, Wm. C. Mason, clk., 139 S. Kirkwood Rd., voted $125,000 bonds June 12, exten., imprv. electric distr. sys. CD 5/28.

South Dakota—RURAL DISTRIBUTION LINES—West Central Electric Co-operative, Murdo, distr. lines, imprvs., Jones Co. $250,000. Ulteig Engineering Corp., 114½ Front St., Fargo, N. D., consult. engrs. CD 1/5.

Texas—RURAL DISTRIBUTION LINES—Concho Valley Electric Co-operative, Inc., Carroll Land, mgr., San Angelo, 236 mi. rural distr. lines, 37 mi. conversion existing lines. (Tex 114—M. Tom Green) Tom Green Co. $299,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 12/26/50.

Wisconsin—SYSTEM IMPRVS., etc.—Grant Electric Co-operative, Lancaster, system imprvs. and headquarters facilities. Grant Co. $343,000.

▲ **Que., Beauport East (Postal Dist. Quebec City)**—WHARF—Syndicate c/o Armand Vaux, City Hall, Quebec City, 2,500 ft. wharf. $3,000,000.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dtp. P. Wks., 100 Nashua St., Boston.

Merritt-Chapman & Scott Corp., 70 Milk St., Boston, Mass. Contract Awarded: $1,746,491, substructure and approaches of new drawbridge to be built across Chelsea River between East Boston and Chelsea, to be known as Meridian Street Bridge. Bids June 5. CD 6/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

H. P. Cummings Constr. Co., 14 Prospect St., Ware, Mass., Contract Awarded: $584,702. Elementary and Junior High SCHOOL, HARTFORD, VT. Town, School Dpt., Hartford, Vt. Hudson & Ingram, 15 S. Main St., Hanover, N. H., archts.

Columbia Constr. Co., 10 Tremont St., Boston, Mass., Low Bidder, $611,000 PM-51, Contr. 3, NURSES HOME, Myles Standish State School, TAUNTON, MASS. Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Pl., Boston, Mass. Bids June 15. CD 6/4.

▲† **Gilbane Building Co.**, 90 Calverly St., Providence, R. I., Contract, Awarded, Approx. $50,000,000. hydraulic die press forging PLANT at North Grafton, for Dpt. Air Force. WORCESTER, MASS. Wyman-Gordon Co., 105 Madison St., Worcester, Mass.

John Zandonella, 70 Chase St., Bridgeport, Conn. Low Bidder. $717,000, Junior High School, Strawberry Hill Ave., NORWALK, CONN. City, City Hall, Norwalk, Conn. Bids June 14. CD 6/1.

Seminole Constr. Co., Inc., 24 Edison St., East Hartford, Conn. Low Bidder. $582,000, Contr. 1 PHA-G-1, foundations and appurtenances, 400 housing units, WATERBURY, CONN. City Housing Auth., 24 Warner St., Waterbury, Conn. Bids June 14. CD 6/1.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES

July 11 New York

STREETS AND ROADS

July 11 New York July 17 New Jersey
July 27 Pennsylvania

N. J., Jersey City—B.A. 7/17— Bd. City Comrs., City Hall, extensions and imprvs. to Rockaway Valley Sewage Treatment Plant, Contr. 1, general construction; Contr. 1E, electrical work; Contr. 1H, heating and ventilating; Contr. 1J, plumbing. Plans deposit $50. Havens & Emerson, Woolworth Bldg., 233 Broadway, New York, N. Y., engrs.; adv. ENR 7/5. CD 11/29/45.

BIDS ASKED—BUILDINGS

Pa., Pittsburgh—HIGH SCHOOL—B.A. 7/9—North Allegheny Joint Auth., West View, Pittsburgh, 1 brick, glass Junior Senior High School, McCandless Twp. $500,000. Plans deposit $100. Mitchell & Ritchey, 4 Ave., Pittsburgh, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Delma Eng. Corp.**, 1208 Wyatt St., New York 60, N. Y. $1,263,188, grade separation structures and approaches carrying Bronx River Parkway extens. over Bruckner Blvd., Bronx Co., NEW YORK, Bureau Contracts & Accounts, Albany, N. Y. Bids May 16. CD 5/24, under LB.

▲† **Merritt-Chapman & Scott**, 17 Battery Pl., New York 4, N. Y. Low Bidder, $4,126,251. 13 BARRACKS bldgs., administration bldg. and central heating system, SAMPSON, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids June 22. CD 1/31.

▲† **Rochez Bros., Inc.**, 1560 Electric Ave., Pittsburgh, Pa. Low Bidder. $2,899,580. Site preparation, grading and drainage work at U. S. Army Signal Corps Depot at TOBYHANNA, PA. U. S. Eng., 121 N. Broad St., Phila. 1, Pa. Bids June 12. CD 5/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Campu Shall Apartments**, 124-30 Queens Blvd., Kew Gardens, N. Y. Owner Builds. $10,000,000. 930 family Garden APARTMENT on 45 acre site at Jewel Ave. and 150 St., KEW GARDENS, N. Y. Blitman & Tischler, 101 Park Ave., New York, N. Y., engrs. Sohn & Weston, 44 Court St., Brooklyn 2, N. Y., archts.

▲ **Paul J. Roche & Romac Building Corp.**, 712 Newbridge Rd., Bellmore, N. Y. Contract Awarded, $1,108,896, general construction, grade SCHOOL, Summitt Lane and addns, alterations to Gardiners Ave. SCHOOL. LEVITTOWN, N. Y. Bd. Educ., Union Free School Dist. 5, Levittown, N. Y. Bids May 11. CD 5/24, under LB.

† **Christensen & Neilsen, Inc.**, 114 Union St., Schenectady, N. Y. Contract Awarded, $595,000. WAREHOUSES for storage of inflammables at Schenectady General Depot, No. Eng 30-075-51-634, VOORHEESVILLE, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. CD 5/15.

▲ **Andrew Christensen & Son, Inc.**, 225 W. Grand St., Elizabeth, N. J. Contract Awarded. $1,000,000. SCHOOL, North Ave., HILLSIDE, N. J. Pingry School, 87 Parker St., Elizabeth, N. J. Bids May 17. CD 5/3.

▲ **Gumina Bldg. & Constr. Co.**, Larch Ave., New Brunswick, N. J. Contract Awarded, $1,638,255, general contract, eight 3 story brick APARTMENTS, incl. 219 low-rent apartments and brick community bldg., Mellon St., Colidge and Eisenhower Aves., TRENTON, N. J. Trenton Housing Auth., 875 New Willow St., Trenton, N. J. Bids June 15, awarded June 22. CD 4/4.

Brownsville Constr. Co., Coal Rd., Brownsville, Pa. Contract Awarded. $734,000. 19 two story, bsmnt., brick veneer Federal HOUSING Proj. 15-5, BROWNSVILLE, PA. Fayette Co. Housing Auth., Uniontown, Pa. Bids June 13. CD 6/7.

▲ **Blaw Knox Co.**, Chemical Plants Div., 321 Penn Ave., Pittsburgh, Pa. Contract Awarded. Approx. $2,000,000. PLANT for recovery of waste nitrogen oxides, DANVILLE, PA. Merick & Co., 126 E. Lincoln Ave., Rahway, N. J. Awarded June 22.

United Constr. Co., 1204 Lincoln Ave., Pittsburgh, Pa. Low Bidder. $823,000. 2 story bsmnt., brick veneer Federal HOUSING Proj. 17-4, DONORA, PA. Washington Co. Housing Auth., Washington, Pa. Bids June 18. CD 6/8.

Brownsville Constr. Co., Coal Rd., Brownsville, Pa. Contract Awarded. $721,000. 2 story, bsmnt. fourteen brick veneer. Federal HOUSING Project 15-6. MASONTOWN, PA. Fayette Co. Housing Auth., Uniontown, Pa. Bids June 13. CD 6/7.

Bendik Constr. & Engineer Co., Gilmore St., Uniontown, Pa. Contract Awarded. $982,580. 20 two story bsmnt., brick veneer Federal HOUSING Proj. 15-4, UNIONTOWN, PA. Fayette Co. Housing Auth., Uniontown, Pa. Bids June 13. CD 6/7.

▲ **Construction Co. of Maryland**, c/o owner, Low Bidder, $6,955,000, exten. of eighty-five bldgs., 637 dwelling units; **J. W. Marchant Co.**, 2901 Edgewood St., Baltimore, Md., $310,949, central HEATING PLANT at Cherry Hill HOMES, BALTIMORE, MD. Housing auth. of Baltimore, 700 E. Eager St., Baltimore, Md Bids June 21. CD 5/29.

Superior Builders, Inc., 514 St. Paul St., Baltimore, Md. Contract Awarded, $595,000, 85 two story, 19x30 ft. and 19x33 ft., masonry row-type HOUSES in groups on Falkirk Rd., Northern Parkway, and Sherwood Ave., BALTIMORE, MD. Dura Bros., Falkirk Rd. and Northern Parkway, Baltimore, Md.

▲ **Myer Grodsky & Assoc.**, 736 Wisconsin Ave., Bethesda, Md. Low Bidder. $806,608, construct, manage and finance 106 HOUSING units, Proj. N-14, INDIAN HEAD, MD. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 21. CD 6/8.

▲ **Cottage Constr. Co.**, 311 Kinderkamack Rd., River Edge, N. J., $7,651,912, Contract Awarded contruct, manage, finance 1,000 unit private rental HOUSING Proj. N. 06, Sec. 1, 2, 3 and 4 at U. S. Naval Air Station, PATUXENT RIVER, MD. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids May 7, awarded June 25. CD 6/15, under LB.

John K. Ruff, Inc., 100 W. 22 St., Baltimore, Md., Contract Awarded, $719,300, 1 story, no bsmnt., 76x293 ft., and 39x64 ft., and 64x162 ft., brick, concrete, steel Lutherville SCHOOL, Timonium, TOWSON, MD. Baltimore Co., Aigburth Rd., Townson, Md. Bids May 9. CD 5/22, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS

July 11 Louisiana

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Nello L. Teer Co.**, Trust Bldg., Durham, N. C., Contract Awarded, $2,416,112, relocation U. S. Hy. 15 and Southern R. R., at Clarksville, CIVENG 44-110-51-60. VIRGINIA. U. S. Eng., foot of Front St., Norfolk, Va. Bids June 20.

▲† **Williams Paving Co.**, 1269 E. Princess Annex Rd., Norfolk, Va. Contract Awarded, $3,448,707, exten. runways and addnl. imprvs. at Naval Ordnance Test Station, NOY 28414, CHINCOTEAGUE, VA. Pub. Wks. Office, Dept. Navy, Fifth Naval Dist., Norfolk 11, Va. Bids May 29. CD 6/18, under LB.

Diamond Constr. Co., 14 and M Sts. S.E., Wash., D. C., Contract Awarded, $592,444. Fingers Piers B, C, D and E at Norfolk Naval Base, NOY 26904, NORFOLK, VA. Pub. Wks. Office, Norfolk, Va. Bids June 12. CD 6/21.

▲† **The Ritter Corp.**, 426 W. York St., Norfolk, Va., Low Bidder. $3,116,624, airport paving, NOY 28421, Spec. 30069, EDENTON, N. C. Pub. Wks. Office, Officer In Charge of Construction, Fifth Naval Dist., Norfolk, Va. Bids June 19. CD 6/6.

F. L. Showalter, Inc., Lynchburg, Va. Low Bidder, $324,353, reservoir; $415,793, general constr.; **C. W. Gallant**, 206 Latta Arcade, Charlotte, N. C., $136,400, filtration equip., for addn. to city water filtration plant (5 m.g.d.), RALEIGH, N. C. City, W. H. Carper, city mgr., City Hall, Raleigh, N. C. Bids June 15. CD 5/11.

▲† **Henley & Beckwith, Inc.**, 2628 Pearl St., Jacksonville, Fla. Low Bidder, $796,000, piping and pumping at naval bulk petroleum terminal, Trout River, Naval Bulk Fuel Station; **George D. Auchter Co.**, foot of E. 56 St., Jacksonville, Fla., $892,500, office and warehouse bldgs., piers and paving for fuel storage facilities, JACKSONVILLE, FLA. Dpt. Navy, Naval Base, Charleston, S. C. Bids June 21. CD 6/7.

▲† **Henry G. Dupree Co.**, 1125 Kings Ave., Jacksonville, Fla. Low Bidder, $1,498,294, steam, gas, air, fuel oil and water distr. systems, PENSACOLA, FLA. Officer-in-Charge of Construction, Naval Air Station, Pensacola, Fla. CD 2/27.

▲ **Southern Constr. Corp.**, 2010 Rose St., Lake Charles, La. Low Bidder. $1,087,116. sanitary sewerage sys., GRETNA, LA. Jefferson Parish Sewer Dist. 2, Gretna, La. Bids June 19. CD 6/7.

Ruby Constr. Co., Madisonville, Ky. Contract Awarded. $576,642. WW addn., MADISONVILLE, KY. City, Madisonville, Ky. Bids June 12, awarded about June 19. CD 6/20, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Virginia Engineering Co.**, Newport News, Va. Contract Awarded. $7,411,000. SCHOOL development and experimental facilities and motor pool, FORT EUSTIS, VA. U. S. Eng., First and Douglas St. N.W., Wash. 25, D. C. Bids June 13. CD 6/20, under LB.

W. T. Gregory Constr. Co., Flat Iron Bldg., Norfolk, Va. Low Bidder, $820,213. TRAINING SCHOOL PRINCESS ANNE, Va. Princess Anne School Bd., Princess Anne, Va. CD 6/19/50.

▲ **Bush Constr. Co.**, Flat Iron Bldg., Norfolk, Va., Low Bidder, $3,797,000. HOUSING, Project VA 6-7, NORFOLK, VA. Norfolk Redevelopment & Housing Auth., Dickson Bldg., Norfolk, Va. Bids June 19. CD 5/22.

▲ **Crystal Lumber Co.**, 620 W. 4 St., Winston-Salem, N. C. Low Bidder. $1,714,000. 240 DWELLINGS, 57 bldgs., Piedmont Park, Housing N. C. 12-3, WINSTON-SALEM, N. C. Winston-Salem Housing Auth., Reynolds Bldg., Winston-Salem, N. C. Bids June 14. CD 5/16.

Cecil's Inc., Spartanburg, S. C. Low Bidder, $934,725, 116 HOUSING units, SPARTANBURG, S. C., Spartanburg Housing Auth., Spartanburg, S. C. Bids June 19. CD 6/7.

George L. Fuller Constr. Co., 202 13 St., Augusta, Ga. Contract Awarded. $504,000. HOSPITAL addns., alterations, SUMTER, S. C. Toumey Hospital, Sumter, S. C. Bids May 24. CD 6/1, under LB.

Jack Culpepper, 114 E. 5 Ave., Tallahassee, Fla., Contract Awarded, $789,304, 105 HOUSING units, BAINBRIDGE, GA. Bainbridge Housing Auth., Bainbridge, Ga. Bids June 20. CD 6/5.

Williams Constr. Co., 1032 13 St., Columbus, Ga., Contract Awarded, $948,000. HOUSING units, COLUMBUS, GA. Columbus Housing Auth., 438 Martin Bldg., Columbus, Ga. Bids June 19. CD 6/25, under LB.

Strother-Barge Co., 114 Ellis St. N.E., Atlanta, Ga., Contract Awarded, $775,541, HOUSING units, DALTON, GA. Dalton Housing Auth., Dalton, Ga. Bids June 21. CD 6/1.

E. A. Scott & Sons, Americus, Ga. Contract Awarded, $598,244, HOUSING units, DAWSON, GA. Dawson Housing Auth., Dawson, Ga. Bids June 21. CD 5/18.

A. R. Briggs Constr. Co., Macon, Ga. Contract Awarded, $653,374, HOUSING Units, DUBLIN, GA. Dublin Housing Auth., Dublin, Ga. Bids June 20. CD 5/29.

Geo. L. Fuller Constr. Co., 202 13 St., Augusta, Ga. Contract Awarded, $788,058, HOUSING units, ELBERTON, Ga. Elberton Housing Auth., Elberton, Ga. Bids June 14. CD 6/20, under LB.

Southern Constr. Co., 1235 Reynolds St., Augusta, Ga. Contract Awarded, $557,000, 80 HOUSING units for White, GAINESVILLE, GA. Gainesville Housing Auth., Gainesville, Ga. Bids June 12. CD 6/15, under LB.

Gilbert Beers, 489 Bishop St., Atlanta, Ga., Contract Awarded, $578,000. 80 HOUSING units, MONROE, Ga. Monroe Housing Auth., Monroe, Ga. Bids June 14. CD 6/20, under LB.

▲ **Byck-Worrell Constr. Co.**, E. Bay St., Savannah, Ga. Low Bidder. $1,523,847, Projects GA 2-5 and GA 2-6, 213 HOUSING units, SAVANNAH, GA. Savannah Housing Auth., Realty Bldg., Savannah, Ga. Bids June 21. CD 6/15.

W. B. Johns, 711 Palatine Ave. S. E., Atlanta, Ga. Contract Awarded. $711,880. HOUSING units, TIFTON, GA. Tifton Housing Auth., Tifton, Ga. Bids June 19. CD 6/25, under LB.

▲ **Delta Constr. Co.**, Brunswick, Ga. and **Paul H. Keasling**, Waycross, Ga. Contract Awarded, $1,756,149, HOUSING units, WAYCROSS, GA. Waycross Housing Auth., Waycross, Ga. Bids June 19. CD 6/25, under LB.

Lyle Roberts, Inc., Coral Gables, Fla. Contract Awarded $646,680, HOSPITAL, DELAND, FLA. Bert Fish Testamentary Trust, Fish Bldg., Deland, Fla. Bids June 9, CD 6/18, under LB.

Joseph G. Moretti Co., Inc., 2401 N.W. 7 St., Miami, Fla. Low Bidder, $916,291, 117 HOUSING units,

KEY WEST, FLA. Key West Housing Auth., Key West, Fla. Bids June 22. CD 5/15.

▲ **Jones & Hardy, Montevallo, Ala. Low Bidder. $1,044,444.** 148-HOUSING units, Project ALA 7-3, DOTHAN, ALA. Dothan Housing Auth., Dothan, Ala. Bids June 22. CD 6/6.

Williams Constr. Co., 1032 13 St., Columbus, Ga. Contract Awarded. **$601,257.** 76-HOUSING units, Frederick Douglas Homes, PHENIX CITY, ALA. Phenix City Housing Auth., Phenix City, Ala. Bids June 21. CD 6/27, under LB.

▲ **Jones & Hardy,** Montevallo, Ala. Contract Awarded. **$628,000.** 68-HOUSING units, SELMA, ALA. Selma Housing Auth., Selma, Ala. Bids June 18. CD 6/25, under LB.

▲ **Adams & Baker,** Tuscaloosa, Ala. Contract Awarded, **$1,057,000,** Project ALA 67-1, 160 HOUSING units, TUSCALOOSA, ALA. Tuscaloosa Housing Auth., Tuscaloosa, Ala. Bids June 19. CD 6/1.

Shelby Constr. Co., 1108 Canal St., New Orleans, La., Contract Awarded. **$864,886,** 150 HOUSING units, CANTON, MISS. Canton Housing Auth., Canton, Miss. Bids June 19. CD 5/31.

Horace B. Rickey, Inc., Lafayette, La. Contract Awarded **$622,807,** construct two low rent HOUSING projects, totaling 100 dwelling units, EUNICE, LA. Eunice Housing Auth., Eunice, La. Bids June 21, awarded June 21. CD 6/6.

Gervais Favrot Co., Inc., Balter Bldg., New Orleans, La., Low Bidder, **$665,808,** 4 story, bsmnt., 40x150 ft., masonry and steel, Cardio Vascular LABORATORY, 1430 Tulane Ave., NEW ORLEANS, LA. Tulane Ed. Fund, Natl. Bank of Commerce, New Orleans, La., Bids June 21. CD 6/5.

R. P. Farnsworth & Co., 1515 S. Salcedo St., New Orleans, La. Low Bidder. **$875,922,** foundations for Calliope Street HOUSING, Proj. LA 1-12, NEW ORLEANS, LA. New Orleans Housing Auth., California Bldg., New Orleans, La. Bids June 19. CD 6/13.

▲ **Hargett Constr. Co.,** 113 Walton Ave., Lexington, Ky., Low Bidder, **$2,148,000** Sect. A—**Switzer Willing Co.,** Trafton Ave., Lexington, Ky., **$1,585,900.** Sect. B, 397 units low cost HOUSING, K-4, K-3, LEXINGTON, KY. Municipal Housing Comn., 600 Blue Grass Park Dr., Lexington, Ky. Bids June 19. CD 5/29.

▲ **Municipal Housing Comn.,** 316 Hale Ave., Owensboro, Ky. rejected bids June 13, 400 HOUSING units, Proj. Ky 9-4 and 9-3, OWENSBORO, KY. L.B. **$4,340,000.** CD 6/18, under LB.

Hamby Constr. Co., Athens, Tenn. Contract Awarded. **$565,568.** 50-HOUSING Proj. Tenn. 15-1, ATHENS, TENN. Athens Housing Auth., Athens, Tenn. Bids June 22. CD 6/7.

Carl Batson, 933 Woodmont Ave., Nashville, Tenn. Contract Awarded. **$510,751,** 75 HOUSING units, FAYETTEVILLE, TENN. Fayetteville Housing Auth., Fayetteville, Tenn. (Correction—contractor). Bids June 14. CD 6/27 under CA.

Pennington & Mackabee, LaFollette, Tenn. Low Bidder, **$729,000.** HOUSING units, LAFOLLETTE, TENN. LaFollette Housing Auth., LaFollette, Tenn. Bids June 19. CD 6/15.

▲† **Robert E. Maxey Constr. Co.,** Lubbock, Tex. Low Bidder, **$1,751,817,** model SHOP and LABORATORY, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. Bids June 19. CD 6/1.

Forcum-James Co., Dyersburg, Tenn., Contract Awarded. Approx. $800,000. Mfg. PLANT, UNION CITY, TENN. American Metal Products Co., 5959 Lindsale St., Detroit, Mich. CD 6/20.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 11 Michigan
STREETS AND ROADS
July 10 Ohio July 11 Michigan
July 17 Indiana

BIDS ASKED—BUILDINGS

Ill., Lyons—SCHOOL—B.A. 7/17—School Dist. 103, 41 St. Costello School, **$500,000.** Perkins & Will, 309 Jackson St., Chicago. Zone 6, archts. CD 11/28/50.

▲ **Ill., Chicago**—PLANT—Bids Asked—Victor Adding Machine Co., 3900 N. Rockwell St., Zone 18, 90,000 sq. ft. plant addn. $1,000,000. Olsen & Urbain, 5 S. Wabash St., Zone 3, archts.

Ind., Anderson—PLANT—Bids Asked—Lynch Corp., 2302 Crystal St., plant addn. $400,000.

SOON LETS CONTRACT—BUILDINGS

▲ **Ind., Fort Wayne**—HOSPITAL—Fort Wayne Methodist Hospital Corp., 119 Lewis St., soon lets contract 4 story, 283x289 ft. brick, concrete, stone, Parkview Hospital addn. $4,000,000. Plans deposit $50. A. M. Strauss, Strauss Bldg., Fort Wayne, archt. CD 9/27/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4, rejected bids June 26, c. conc. wid'n., 8.821 mi. and bit. resurf. 11.799 mi. State Rds. 25 and 14 U. S. Rd. 31, Rochester, Cass and Fulton Counties, L.B. **$37,207;** c. conc. wid'n. 4.729 mi., bit. resurf. 4.899 mi. State Rds. 54 and 67, Switz City to Bloomfield, Greene Co., L.B. **$148,890;** c. conc. wid'n., bit. resurf. 13 mi. State Rd. 41, Hazelton and Vincennes, Knox Co., L.B. **$266,001;** c. conc. ½ mi. dual lane, State Rd. 2, South Bend, St. Joseph, L.B. **$265,029;** c. conc. wid'n., 13.965 mi. State Rd. 25, Lafayette to Delphi, Tippecanoe and Carroll Counties, L.B. **$185,704;** c. conc. wid'n., bit. resurf. 10.24 mi. State Rd. 136 from Illinois State Line to Hillsboro, Vermillion, Warren and Fountain Counties, L.B. **$323,580.** CD 6/7.

INDIANA—State Hy. Comn., State House Annex, Indianapolis.

Ralph Rogers & Co., Bloomington, Ind. Low Bidder, **$263,559,** est. $271,540, aggregate base and bit. resurf. 7.648 mi. State Rd. 58 from State Rd. 45 near Owensburg to State Rd. 54 near Springville, Greene and Lawrence Counties; **$83,290,** est. $84,-001, bit. resurf. 4.673 mi. State Rd. 45 Doans to near Owensburg, Greene Co.; **$521,024,** est. $522,-821, c. conc. wid'n., bit. resurf. 14.57 mi. State Rds. 445 and 45 Cincinnati, Ind. to Bloomington, Monroe Co.

Middle West Roads Co., Noblesville, Ind., **$436,604,** est. $517,150, c. conc. wid'n., 14.165 mi. bit. resurf. 20.295 mi. State Rd. 67 N.E. of Greene-Owen Co. line to Spencer, in Spencer and to Owen-Morgan Co. line, Owen Co.; **$171,370,** est. $183,224, c. conc. wid'n., and bit. resurf. 5.537 mi. State Rd. 67 from W. of Martinsville to Centerton Morgan Co.

Reith-Riley Constr. Co., 311 W. Monroe St., Goshen, Ind., **$205,516,** bit. resurf. 9.454 mi. State Rd. 20 in and west of LaGrance.

Brooks Co., 1315 Bartholdt St., Fort Wayne, Ind., **$118,744,** est. $140,953, bit. resurf. 7.033 mi. U. S. Rd. 27, Waterloo north, Dekalb and Steuben Counties.

Grady Bros., 2702 Barnes St., Indianapolis, Ind., **$219,-724,** est. $258,564, c. conc. wid'n., 6.18 mi. bit. resurf. 6.58 mi. north from 71 St. Indianapolis to Carmel, Marion Co.

Mohr Constr. Co., 1420 S. Union St., Kokomo, Ind., **$373,408,** c. conc. wid'n., 10.657 mi. bit. resurf. 14.464 mi. U. S. Rd. 35 in Kokomo and from Kokomo to Greentown, Howard Co.

Wayne Paving Co., 1035 Lincoln Bank Tower, Fort Wayne, Ind., **$744,595,** est. $821,511, c. conc. wid'n., 20.617 mi. bit. resurf. 23.007 mi. U. S. Rd. 35 and State Rds. 3 and 7 in Muncie; State Rd. 7 Mt. Pleasant to Economy; State Rd. 9 and 32 in Anderson, Delaware and Madison Counties. Bids June 26. CD 6/7.

▲† **Terry & Wright,** 209 Cabel St., Louisville, Ky. Low Bidder, **$1,470,000,** Section B, flood control wall Serial No. CIVENG 115-029-51-128, NEW ALBANY, IND. U. S. Eng., 830 West Broadway, Louisville, Ky. Bids June 19. CD 6/4.

ILLINOIS—State Div. Hys., Springfield, Ill.

McCay & Hasse, 606 Yale Bldg., Hammond, Ind. Contract Awarded, **$744,371,** c. conc. 1.69 mi. Ill. 122, Calumet Parkway, Cook Co. Bids May 25. CD 5/31, under LB.

▲ **Chicago, Milwaukee, St. Paul & Pacific R. R. Co.,** R. J. Middleton, ch. engr., Union Station, Chicago 6, Ill., Owner Builds. **$3,000,000,** installing car retarder and signal system in its east Bound Yard, MILWAUKEE, WIS.

▲ **Louis Garavaglia,** 24240 Mound Rd., and **Sugden & Sivier,** 2323 East 8 Mile, Center Line, Mich. Contract Awarded. **$1,388,400,** est. $1,300,000. Altering water-drainage sys., sewer relocation and city lighting and power facilities. (U) 82-127-C-55 (U)-404-50. DETROIT, MICH. State of Michigan, Charles M. Ziegler, state hy. comr., 222 Townsend St., Lansing 13, Mich. Bids June 6. CD 6/12, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ang Constr. Co.,** 209 S. 3 St., Columbus, O. Low Bidder, **$3,235,718,** 19 brick, concrete bldgs., Ohio State TRAINING SCHOOL, MARION, O. Dpt. P. Wks., 705 Ohio Depts Bldg., Columbus, O. Miller & Bonnevich, 1011 Swetland Bldg., Cleveland, archts. Bids June 26. CD 5/31.

▲ **Rust Furnace Co.,** 575 6 Ave., Pittsburgh, Pa., Contract Awarded, **$2,000,000,** 6 batteries of soaking pits for its Indiana Harbor Works, EAST CHICAGO, IND. Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O. CD 12/28/50.

▲ **H. K. Ferguson Co.,** 1789 E. 11 St., Cleveland, O. Contract Awarded. **$3,000,000.** PLANT, Elston, LAFAYETTE, IND., Eli Lilly & Co., E. Georgia St., Indianapolis 6, Ind. CD 4/13.

▲ **Whittenberg Constr. Co.,** 2214 S. Floyd St., Louisville, Ky.; **Dunlap & Co.,** Columbus, Ind., and **W. L. Hailey & Co.,** 314 42 Ave. N., Nashville, Tenn. Low Bidders. **$3,177,855.** Low-cost rental HOUSING, First Section, NEW ALBANY, IND. New Albany Housing Comn., New Albany, Ind. Bids June 20. CD 6/7.

Peter Schumacher & Sons, 321 S. Spring St., Mishawaka, Ind. Contract Awarded. Approx. **$600,000,** Fisher Memorial DORMITORY, SOUTH BEND, IND. Notre Dame University, Campus, South Bend, Ind. Bids Mar. 26, awarded June 19. CD 3/13.

▲ **L & F Builders,** 6255 Sunkley St., Chicago 36, Ill., Owner Builds. **$2,000,000,** 285 RESIDENCES, Crawford Ave. and 79 St., CHICAGO, ILL. Nordl e & Co., 11106 S. Michigan St., Chicago 28, Ill., archts. Awarded June 20.

Leo Michuda & Son, 514 E. 95 St., Chicago 19, Ill. Low Bidder, **$590,080,** general contract, RESIDENTIAL UNIT at Chicago Medical Center, CHICAGO, ILL. State Div. Architecture & Eng., Springfield, Ill. Bids June 12. CD 6/5.

Eriksen & Blanchard, Wilmington, Ill. Contract Awarded. **$513,789.** General constr. 1 story, brick, concrete, steel, stone Senior HIGH SCHOOL, COLFAX, ILL. Bd. Educ., Octavia Community High School Dist., Colfax, Ill. Bids June 5. CD 5/31.

B. W. Handler Constr. Co., 223 W. Jackson Blvd., Chicago, Ill., **$572,000.** General contract, heating, plumbing pipe covering and electrical work for rehabilitation 6 bldgs. at Galesburg State Hospital, GALESBURG, ILL. State, Springfield, Ill. Awarded June 22. CD 3/5, under LB.

Lloyds Builders, Inc., 61 W. Superior St., Chicago 10, Ill. Low Bidder, **$900,000,** 100-unit APARTMENT, LINCOLN, ILL. Logan County Housing Auth., Lincoln, Ill. Lankton & Ziegele, 1100 Main St., Peoria, Ill., archts.

Pearson Constr. Co., Benton Harbor, Mich. Contract Awarded. **$745,000.** 86 family units, Public HOUSING administration, Mich 10-2, BENTON HARBOR, MICH. City, Benton Harbor Housing Auth., Benton Harbor, Mich., Bids June 14. CD 6/1.

Miller-Davis Co., Kalamazoo, Mich. Contract Awarded, **$590,000.** DETENTION COLONY, construction buildings, State Home and Training School, COLDWATER, MICH. State of Michigan, A. N. Langius, dir. Bldg. Dpt., Lansing, Mich. Bids May 16. CD 4/20.

▲ **O. W. Burke Co.,** 1032 Fisher Bldg., Detroit, Mich. Contract Awarded. **$3,252,953,** est. $3,000,000. Brick, steel, concrete COLLEGE OF MEDICINE, medical science unit, classrooms, and laboratories, St. Antoine St., DETROIT, MICH. Wayne University, 4841 Cass Ave., Detroit, Mich. Bids Apr. 4. CD 4/18, under LB.

▲ **W. E. Wood Co.,** 4649 Humbolt St., Detroit, Mich. Contract Awarded. **$2,300,000.** 5 story brick, steel, concrete 135-bed HOSPITAL addn. extensive alterations, Meyers Rd., DETROIT, MICH. Grace Hospital, 18700 Meyers St., Detroit, Mich. Bids Apr. 17. CD 3/28.

▲ **Harry Slatkin Builders, Inc.,** 20125 Evergreen St., Detroit, Mich. Contract Awarded. Approx. $2,200,000. 200 brick ranch HOMES, Beech Rd., DETROIT, MICH. Slater Realty Co., 19911 Evergreen St., Detroit, Mich.

▲ **Dunning Homes Co.,** 15030 Wyoming St., Detroit, Mich. Contract Awarded. Approx. **$10,000,000.** 1,000 HOMES, Dunning Park sub-division, Plymouth and Telegraph Rds., REDFORD, MICH. Ira Hotchkiss Co., 15930 Wyoming St., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 10 Iowa July 17 Texas
STREETS AND ROADS
July 10 Iowa July 17, 18 Texas
July 18 Kansas

BIDS ASKED—BUILDINGS

▲ **Minn., Minneapolis**—HOUSING—B.A. 8/3—Housing and Redevelopment Auth., A. C. Godward, exec. dir., 1014 Metropolitan Life Bldg., housing, St. Marys and Williams Aves., Southeast, Site F, 184 units, $2,000,000. Larson & McLaren, 1901 Foshay Tower, archts. CD 1/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Donovan-Lovering-Boyle Co.,** 2480 N. Elston St., Chicago, Ill. Low Bidder, **$12,955,566.** Power House for Fort Randall Reservoir Project, Inv. 25-066-51-102, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 14.

▲ **SOUTH DAKOTA**—State Hy. Comn., Pierre,

Northwestern Eng. Co., Rapid City, S. D., **$793,930.** c. conc. paving 11.142 mi. SAP 299, Aurora Co., CD 6/21, under LB.

Inland Constr. Co., 3867 Leavenworth St., Omaha, Neb., **$100,260,** base course 10.114 mi. Proj. F 95 (17), Faulk Co.; **$152,287,** bit. surf. 10.114 mi. Proj. F 95 (17), Faulk Co.

Floyd D. Stapp Constr., Rapid City, S. D., **$76,992,** base and mat 5.852 mi. Proj. FAP 130A and B, Custer Co. Grand total $1,123,469. Bids June 14. CD 6/4.

† **H & B Constr. Co.,** P. O. Box 1388, Rapid City, S. D. Low Bidder, **$582,959,** readiness building and hangar at Rapid City Air Force Base, Inv. 63, near Weaver, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 15. CD 6/6.

▲ **OKLAHOMA**—State Turnpike Auth., Capitol, Oklahoma City, Zone 5, rejected bids June 19, 5.023 mi. roadbed in Depew, Creek Co., L.B. **$3,783,280,** est. $3,682,325 ***5.292 mi. roadbed, Creek Co., L.B. **$486,249,** est. $386,839***fencing 88 mi. from Oklahoma City to Tulsa, L.B. **$174,858,** est. $248,835. CD 6/25, under LB.

▲ **El Paso Natural Gas Co.,** Bassett Tower Bldg., El Paso, Tex. Force Account. Approx. **$3,450,000.** 96 mi. 20- to 24-in. welded joint natural gas pipe line vicinity, Benedum, Upton Co. to near Langtry in Val Verde Co., TEXAS. C. L. Moore, c/o owner, asst. ch. engr. CD 7/20/50.

▲† **Hill & Combs,** 321 Melrose Pl., San Antonio, Tex., Contract Awarded. **$1,649,000,** 20 dormitory or barracks; **$574,125,** mess halls; **$627,325,** 2 administration bldgs., at Kelly Field Air Force Base, Inv. No. Eng 41-243-51-86, KELLY AIR FORCE BASE, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Grand total $2,850,450. Bids June 14, awarded June 23. CD 6/20, under LB.

▲† **J. E. Morgan & Sons, Box 721, El Paso, Tex.** Contract Awarded, $1,308,522, AFF buildings, for anti-aircraft firing facilities, on Lots 1, 3, 5 and 7; **Robert E. McKee General Contractor, Inc.,** 1918 Texas St., El Paso, Tex., $62,737, for Lot 4 of anti-aircraft firing facilities, Serial No. ENG 29-005-51-54, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 5. CD 6/20, under CA.

NEW MEXICO—State Hy. Comn., Santa Fe,

Brown Contg. Co., 3525 N. 4 St., Albuquerque, N. M., Contract Awarded, $451,170, grading, minor drainage structures, 4 multiple concrete box culverts, each over 20 ft. clear span, watering, rolling, levelling course, ballast, hot plant bit. surf. course, sealing with asph. and stone chips, misc. constr. 6.484 mi. U. S. Hy. Route No. 85 between Raton and Hoxie Junction, FAP No. F I-1 (19), Colfax Co.; $210,656, hot plant bit. surf. course, sealing with asph. and stone chips misc. constr. 5.354 mi. U. S. Hy. Route No. 85 between Maxwell and Springer, FAP No. F-91 (9), Colfax Co.

Jack Adams, Santa Fe, N. M., $221,518, hot plant bit. surf. course, asph. and stone chips, sealing, misc. constr. 10.676 mi. N. M. Hy. Route No. 17 between Colorado-New Mexico State Line and Chama, FAP No. F. F-182 (6).

Skousen-Hise Contr. Co., Springer Bldg., Albuquerque, N. M. $147,954, bit. top course surf. misc. constr. 8.996 mi. N. M. Hy. Route 10 between Mirera and Chilili, FAP No. S-214 (17), Bernalillo Co. Grand Total $1,031,298. Bids June 19.

BUILDINGS

LOW BIDS AND CONTRACTS

B. J. Engelen Constr. Co., Springfield, Minn. Low Bidder, $613,080, 2 story, part bsmnt., 601x192 ft. HIGH SCHOOL, 2 story, 60x140 ft. GRADE SCHOOL wing; 2 story 64x116 ft., GYMNASIUM WING addn.; 1 story 64x90 ft., SHOP area, HECTOR, MINN. Bd. Educ., L. Rick, clk., Hector, Minn. Bids June 14. CD 5/2.

Wiches Boiler Co., 414 New Center Bldg., Milwaukee, Wis. Low Bidder, $848,823, furnishing, erecting two STEAM GENERATING UNITS for municipal power plant, HIBBING, MINN. Village, P. Utilities Comn., E. A. Anderson, secy., Hibbing, Minn. Bids June 19. CD 5/23.

Fowler-Vernath Constr. Co., 1 Ave. E., Duluth, Minn. Contract Awarded, $937,000, Haven Court HOUSING, incl. 100 units, one management-maintenance bldg., street grading and paving, HIBBING, MINN. Housing & Redevelopment Auth. of Hibbing, Clyde Salminen, exec. dir., Hibbing, Minn. Bids June 14.

† **Barksdale & Leblanc Constr. Co.,** Barksdale, La., Contract Awarded, $555,556, complete rehabilitation and restoration 129 buildings in Areas 6 and 14 to be used for housing receptees and overhead personnel, CAMP CROWDER (NEOSHO P.O.), MO. Contg. Officer, Camp Crowder, Mo. Bids June 18.

J. E. Pyle, Commercial National Bank Bldg., Little Rock, Ark. Low Bidder, $519,098, erecting HOUSING, Proj. ARK. 5-2, BLYTHEVILLE, ARK. Blytheville Housing Auth., Blytheville, Ark. Bids June 19. CD 6/6.

▲ **Grimshaw Constr. Co.,** Kome Bldg., Tulsa, Okla. Low Bidder, $4,050,000 general contract, HOSPITAL bldg., LITTLE ROCK, ARK. Sisters of Charity, 1000 High St., Little Rock, Ark. Bids June 19. CD 5/3.

▲ **J. E. Dunn Constr. Co.,** 929 Holmes St., Kansas City, Mo. Contract Awarded, $1,652,622, general constr.***Sheahan & Degan Inc., 1014 Kansas St., Topeka, Kan., $573,950, plumbing, heating and air conditioning for HOSPITAL addn., TOPEKA, KAN. City, City Hall, Topeka, Kan. Bids June 14. CD 5/8.

▲ **J. M. Odom,** Box 774, Austin, Tex. Contract Awarded, $1,064,702. 160 units in 25 two story brick veneer or solid masonry Chalmers HOUSING extens., Tex. 1-4, AUSTIN, TEX. Austin Housing Auth. 302 Chalmers St., Austin, Tex. Bids June 12, awarded June 22. CD 6/19, under LB.

▲ **Yarbrough Constr. Co.,** 410 Navasota St., Austin, Tex., Contract Awarded, $2,154,129, Rosewood HOUSING addn., 300 units in 52 buildings, brick veneer constr., Proj. No. TEX 1-5, AUSTIN, TEX. Austin Housing Auth., Chalmers St., Austin, Tex., Bids June 19, awarded June 22. CD 6/25, under LB.

Arthur Temple, Lufkin, Tex. Low Bidder, $541,339, est. $500,000. 75 DWELLING units in 18 buildings and mgr.'s bldg., brick veneer constr., COMMERCE, TEX. Commerce Housing Auth., c/o exec. dir., Commerce, Tex. Bids June 21. CD 5/29.

▲ **A. J. Rife,** 2608 Inwood Rd., Dallas, Tex., Low Bidder, $2,713,995. 426 brick DWELLING units for Bexar St. Project, Tex. 9-9, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas St., Dallas, Tex. Bids June 22. CD 6/12.

Busboom & Rauh Constr. Co., Southland Life Bldg., Dallas, Tex., Low Bidder, $726,532. 102 brick, hollow tile DWELLING units, concrete slab on grade, Tex. 9-7, DALLAS, TEX. Dallas Housing Auth., 12525 Lucas Dr., Dallas, Tex. Bids June 21. CD 6/12.

Milo J. Choate, 1412 W. S St., Tyler, Tex. Contract Awarded, $621,056, est. $775,000. 100 DWELLING units for total 27 bldg., Tex. 26-5, DENISON, TEX. Denison Housing Auth., Denison, Tex. Bids June 19, awarded June 22. CD 6/25, under LB.

▲ **E. E. Cloer, Inc.,** 2825 Crockett St., Fort Worth, Tex. Owner Builds. Approx. $1,000,000. addnl. HOUSING, incl. 230 units in forty 2 story buildings, FORT WORTH, TEX. CD 6/14.

▲ **R. G. LeTourneau Co.,** Longview, Tex. Own Forces. Approx. $4,500,000. STEEL MILL, 1,000 tons sheet steel daily capacity, LONGVIEW, TEX. CD 5/31.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex., Low Bidder, $715,600. 100 HOUSING units for total 21 buildings, ORANGE, TEX. Orange Housing Auth., Orange, Bids June 22. Carter & Burgess, Century Bldg., Fort Worth, engrs. Matkin & Fitch, 4101 San Jacinto St., Houston, archts.

▲ **R. F. Ball Constr. Co.,** 3200 W. Dallas St., Houston, Tex. Contract Awarded, $2,023,000. 275 HOUSING units, Tex. 6-7, SAN ANTONIO, TEX., San Antonio Housing Auth., 419 S1 St. Marys St., San Antonio, Tex., Bids June 12. CD 6/18, under LB.

▲ **R. F. Ball Constr. Co.,** 3200 W. Dallas St., Houston, Tex., Contract Awarded, $3,689,777. 500 DWELLING units, Tex. 6-10, SAN ANTONIO, TEX. San Antonio Housing Auth., 419 S. St. Marys St., San Antonio, Tex. Bids June 22. CD 6/27, under LB.

R. W. Mier Constr. Co., 2045 W. 8 Ave., Denver, Colo., Contract Awarded, $587,876, est. over $300,000, 40-single family 3-bedroom RESIDENCES, CLIMAX, COLO. Climax Molybdenum Co., Midland Savings Bldg., Denver, Colo. F. S. McNicholsa, Midland Savings Bldg., Denver, and R. J. Tipton & Assocs., 601 Insurance Bldg., Denver, engrs. Linder, Hodgson & Wright, 507 Insurance Bldg., Denver, archts. Awarded June 21.

† **Berglund-Cherne Co.,** 25 S. Dexter St., Denver, Colo., Low Bidder, $517,000, Bldg. 2A alterations, incl. mezzanine floor and altering section of bldg. formerly used for ammunition mfg., DENVER, COLO. General Services Admin., Bldg. 1C, Denver Federal Center, Denver, Colo. CD 3/9.

† **Walden, Fulton & Payne,** Box 628, Lubbock, Tex., Contract Awarded, $758,917, FIRE STATION, CHANGE HOUSE, new bldgs., new and modified auxiliary bldgs., LOS ALAMOS, N. M., U. S. Atomic Energy Comn., Los Alamos, N. M. CD 5/23, under LB.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **M. M. Sundt Constr. Co.,** Box 2592, Tucson, Ariz. Low Bidder, $1,953,639, est. $2,500,000. Runway 6 and taxiways ENG 04-353-51-95; $269,478, runway and taxiway lights, ENG 04-353-51-96; **Corbin & Davis Elec. Co.** and **Dykes Electric Co.,** Tucson, Ariz., $93,149, electrical distr. sys. ENG 04-353-51-97, all Davis-Monathan Air Force Base, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 22. CD 6/15.

† **Dodge Constr. Co.,** Box 31, Fallon, Nev. Contract Awarded, $807,695, grading, paving, construct scientific structures, Inv. No. 291-J1-122, LAS VEGAS, NEV. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids June 14, awarded June 25. CD 6/26, under LB.

† **C. J. Montag & Sons,** 7805 N. E. Halsey St., Portland, Ore. Low Bidder, $774,980, alert hangar alert apron, Larson Air Force Base, Eng 45-164-51-12, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 18. CD 6/6.

▲† **Peter Kiewit Sons' Co.,** 345 Kieways Ave. Arcadia, Calif. Contract Awarded, $6,197,184. Aprons, runways, taxiways, etc. at March Air Force Base, ENG 04-353-5178, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. June 14. CD 6/18, under LB.

▲† **Alliance Constr. Co.,** 308 Monterey Rd., South Pasadena, Calif. Low Bidder. $2,059,355, est. $2,300,000. Enlisted men barracks and facilities, at Edwards Air Force Base, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 21.

▲† **R. E. Hazard Constr. Co.,** Box 1951, San Diego, Calif. Low Bidder. $1,266,800. Exten. runway 11-29 Spec. 29065, Naval Air Station, SAN DIEGO, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids June 26. CD 6/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Tolboe & Harling Const. Co., Dooly Bldg., Salt Lake City, Utah. Contract Awarded, $852,131, est. $752,800. 10 buildings in Area "D" incl. DECONTAMINATION bldg., FIELD OPERATIONS bldg., MEDICAL TEST LABORATORY, MUNITIONS STORAGE bldg., EXPLOSIVE IGLOOS, MUNITIONS COLD STORAGE bldg., PLANT GROWING bldg., WAREHOUSE, EXPOSURE bldg. and CHEMICAL LABORATORY, Dugway Proving Ground, TOOELE, UTAH. U. S. Eng., 74 New Montgomery St., San Francisco, Calif. Bids May 29. CD 6/7, under LB.

R. J. Daum Constr. Co., 6803 West Blvd., Inglewood, Calif., and **M. J. Brock & Sons, Inc.,** 2894 Rowena Ave., Los Angeles, Calif. Low Bidders, $842,960. Proj. Nev. 2-1, 50 one story DUPLEXES with units ranging from 1 to 4 bed-rooms, ADMINISTRATION BLDG. addn., masonry constr., LAS VEGAS, NEV., Las Vegas Housing Auth., Administration Bldg., Las Vegas, Nev. Bids June 14. CD 5/24.

Ross B. Hammond, Box 3901, Portland, Ore. Contract Awarded, $516,271, 50 bed HOSPITAL, LEBANON, ORE., Lebanon Community Hospital, Lebanon, Ore. Bids June 12. CD 6/20, under LB.

▲ **Vinnell Co., Inc.,** 1145 Westminster Ave., Alhambra, Calif. Contract Awarded. $5,300,000. 450,000 sq. ft. tooling FOUNDRY addn., HANGAR and ASSEMBLY bldg. units, HAWTHORNE, CALIF. Northrup Aircraft Co., Inc., Hawthorne, Calif. Awarded June 21.

▲**Williams & Burrows,** 10 California Dr., Burlingame, Calif. Low Bidder. $1,934,000. 260 low-rent HOUSING Units, OXNARD, CALIF. Housing Auth. of City of Oxnard, 872 W. 7 St., Oxnard, Calif. Bids June 22. CD 6/13.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Peter Kiewit Sons Co.,** 1024 Omaha Natl. Bank Bldg., Omaha, Neb. and **Morrison-Knudsen Co.,** 319 Broadway, Boise, Idaho. Low Bidder, $21,321,695, est. $21,205,105. Eklutna Tunnel project, Spec. 3443, ALASKA. Bureau Reclamation, Dpt. Interior, Palmer, Alaska. Bids June 25. CD 6/4.

▲† **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho. Contract Awarded, $7,400,000, outside utilities and railroad trackage for Inv. 51-79, FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids June 14. CD 6/26, under LB.

▲† **Scheuman Johnson, et al,** Lloyd Bldg., Seattle 1, Wash. Contract Awarded, $1,858,000, est. $2,561,759, port facilities, bulkhead wharf, Inv. No. 51-109, HAINES, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids June 8. CD 6/12, under LB.

▲ † **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho. Contract Awarded, $1,300,228, rehabilitation of King Salmon Airport Inv. No. 851-572, NAKNEK, ALASKA. Civil Aeronautics Admin., Box 440, Anchorage, Alaska. Bids May 14. CD 5/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Nelse Mortenson & Co.,** 1021 Westlake Ave. N., Seattle, Wash. Contract Awarded, $2,060,914, ACS FACILITIES at Harding Lake, Big Delta, Johnson River, Tok Junction, Northway, Glenallen and Sheep Mountain, ALASKA. U. S. Eng., (APO 942 c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids May 16. CD 5/23, under LB.

▲† **Grove, Shepherd, Wilson & Kruge, Inc.,** Anchorage, Alaska. Contract Awarded, $7,243,493, 5 story rein.-con. 206 bed station HOSPITAL, Inv. No. 595-507-51-33, Ladd Air Force Base, ALASKA. U. S. Eng., New Washington Hotel, Seattle, Wash. Bids June 21. CD 6/26, under LB.

▲ † **Associated Builders,** 420 Queen Anne Ave., Seattle, Wash. Contract Awarded, $1,519,700, 75 HOUSING units, Proj. No. ALAS-1-1, FAIRBANKS, ALASKA. Alaska Housing Auth., 11 and 1 Sts., Anchorage, Alaska. Bids May 15. CD 5/23, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **B. C., Victoria**—PLANT—Bids Asked—British Columbia Forests Products Ltd., 995 W. 6 Ave., Vancouver, plywood plant. Approx. $2,000,000. CD 6/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Highway Constr. Co. Ltd., 789 West Pender St., Vancouver, B. C. Low Bidder, $541,006 reconstr. 1.33 mi. Yale-Bell Crossing Section of Trans-Canada Hy., BRITISH COLUMBIA Province of B. C., Douglas Bldg., Victoria, B. C. M. McCallum, Douglas Bldg., Victoria, B. C., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

G. W. Golden Constr. Co. Ltd., 8925 82 St., Edmonton, Alta. Owner Builds, $750,000 85 one and half story frame stucco HOMES, in Silver Heights Subdivision EDMONTON, ALTA. CD 6/25.

▲ **Dawson & Hall, Ltd.,** 775 Clark Dr., Vancouver, B. C. Contract Awarded, $1,262,375, 3 story, bsmnt., 121-bed rein.-con. HOSPITAL, PENTICTON, B. C. Penticton Hospital Bd., Penticton, B. C. Bids May 31. CD 6/22, under LB.

Vancouver Plywood Div., H. R. MacMillan Export Co., Ltd., south ft. Dorman Rd., Vancouver, B. C. Owner Builds. $500,000. 36,700 sq. ft. plywood PLANT existing plant addn., VANCOUVER, B. C. CD 6/26.

▲ **Acme Constr. Co. Ltd.,** 45 Canterbury St., St. John, N. B. Contract Awarded, $1,400,000. 88-unit APARTMENTS, ST. JOHN, N. B. Govt. of Canada, Dpt. Resources & Development, Ottawa, Ont. Bids May 26. CD 5/4.

▲ **Stone & Webster Canada, Ltd.,** 220 Keating St., Toronto, Ont. Contract Awarded, $1,000,000, carbon black PLANT, SARNIA, ONT. Godfrey L. R. Cabot, Inc., 77 Franklin St., Boston, Mass., U.S.A. CD 11/21.

▲ **Damieu Boileau Ltd.,** 705 Beaumon Ave., Montreal, Que. Contract Awarded, Approx. $2,700,000, STUDENT CENTER, MONTREAL, QUE. University of Montreal, 2900 Mount Royal Blvd., Montreal, Que. CD 5/9.

▲ **Domien Boileau Ltee,** 705 Beaumont Ave., Montreal, Que. Contract Awarded, Approx. $4,000,000. HOSPITAL and NURSES HOME at University, MONTREAL, QUE. University of Montreal, 2900 Mount Royal Blvd., Montreal, Que. L. Venne, 3607 St. Denis St., Montreal, Que., archt. CD 10/18/45.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Victoria, Portland**—Bids Asked—Govt. of Australia, Melbourne, harbour improv., incl. quarrying, breakwater, dredging, reclamation, wharves, sheds, etc. $20,000,000.

CONSTRUCTION REPORTS

Third Section

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **N. J., Summit**—HOSPITAL—B.A. 7/17—Bd. Trustees, Overlook Hospital, 193 Morris Ave., Overlook Hospital addns., alterations, $1,878,950. CD 2/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Fred J. Brotherton, Inc.**, 185 Atlantic Ave., Hackensack, N. J. Low Bidder. $2,180,502. Airmens' mess, 7 dormitories, alert hangar, and control tower at McGuire Air Force Base, Fort Dix, WRIGHTSTOWN, N. J. U. S. Dept. Defense, The Pentagon, Wash., D. C. CD 3/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Seckler & Shepperd**, 262 Main St., Paterson, N. J. Owner Builds. $3,000,000. 300 one-family HOUSES on 230 acre site off State Highway 23, WEST MILFORD, N. J.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore Md. Contract Awarded, $1,801,000, est. $2,000,000. 2 story, part bsmt., 260x425 ft. brick, concrete, Parkville High SCHOOL, Parkville, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, archts. Van Rensalaer Saxe, 1701 St. Paul St., Baltimore, structural engr. Egli & Gompf, Inc., 109 N. Calvert St., Baltimore, mechanical engr.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Bero Eng. & Constr. Co.**, Hampton, Va., Low Bidder, $2,400,739, airport pavement, N.A.A.S. NOY 28422, FENTRESS, VA. Pub. Wks. Office, Fifth Naval Dist., Norfolk 11, Va.

▲† **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. Low Bidder. $16,790,000, 14 groups of AM DORMITORIES and MESS HALLS, Kessler Air Force Base, Inv. 51-93 BILOXI, MISS. U. S. Eng., P. O. Box 1169, Mobile, Ala. Bids June 19. CD 5/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **R. H. Wattinger**, 11 N. 6 St., Richmond, Va., and **Thompson & Street Co.**, Pineville Rd., Charlotte, N. C. Contract Awarded, $7,672,000. HOUSING, Proj. VA 705 and VA 7-4, RICHMOND, VA. Richmond Redevelopment and Housing Auth., 100 E. Main St., Richmond, Va. Bids June 20. CD 6/26, under LB.

▲ **Eyck-Worrell Constr. Co.**, E. Bay St., Savannah, Ga., Contract Awarded, $1,523,847, HOUSING Projects GA 25 and GA 2-6, 213 housing units, SAVANNAH, GA. Savannah Housing Auth., Realty Bldg., Savannah, Ga. Bids June 21. CD 6/27, under LB.

▲ **Batson-Cook Co.**, West Point, Ga. Low Bidder, $3,483,000. HOUSING, Project ALA 1-7, 500 units, BIRMINGHAM, ALA. Birmingham Housing Auth., 600 N. 24 St., Birmingham, Ala. Bids June 26. CD 5/28.

WEST OF MISSISSIPPI

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Wichita Falls**—DWELLINGS—B.A. U. S. Eng., Box 61, Tulsa 2, Okla. soon lets contract, manage, finance, 612 low cost dwelling units, total 306 bldgs., FHA Proj. No. 113-80004, AF No. 2, brick exterior, concrete slab fdn., constr. $5,500,000. Charles E. Armstrong, Majestic Bldg., Fort Worth, engr. and archt. J. D. Turner & J. R. Killebrew, Wichita Falls, assoc. archts. Otto Phillips, 5134 S. Ervay St., Dallas, site planner. CD 2/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Reno Constr. Co.**, Overland Park, Kan. Contract Awarded, $2,927,000, est. $3,000,000 Olathe Naval Air Station, new runways, taxiways, repairs, improvs., relocation of some facilities, OLATHE, KAN. Ninth Naval Dist., Great Lakes, Ill. Bids June 8, awarded June 27. CD 6/14, under LB.

▲† **Southwest Welding & Mfg. Co.**, 3201 W. Mission Rd., Alhambra, Calif. Low Bidder, $4,284,513, Est. $4,759,673, Sch. 2, 4, 6 and 8 welded or riveted field girth joints, $4,357,771, est. $5,029,121, Sch. 1, 3, 5 and 7, sleeve coupled field girth joints, for Upper and Lower portions of Pole Hill penstock and Flatiron penstock and penstock valve structure, Colorado Big Thompson Proj., Spec. DC-3431, Winston Bros. Co., 431 N. Irwindale Ave., Azusa, Calif., $350,426, est. $140,282, Sch. 1, concrete penstock for upper portion of Pole Hill Plant; $554,470, est. $313,123, Sch. 2, concrete penstock for upper portion of Flatiron Power Plant; A. S. Horner Constr. Co., 118 S. Pecos St., Denver, Colo., $238,260, est. $241,080, Sch. 3, Carter Lake pressure conduit with precast concrete pipe, Colorado Big Thompson Proj., DC-3432, COLORADO, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids June 26. CD 5/18.

OFFICIAL PROPOSALS

Bids: July 12, 1951

Postponement of Bid Date

Bridge

NOTICE TO CONTRACTORS

Sealed bids for furnishing labor, equipment, tools, materials, not furnished by Owner, and performing all work of raising 3-300 ft. steel spans, 1-300 ft. swing span, and 1-721 ft. cantilever span, of the New Orleans, Texas & Mexico Railway Bridge over the Atchafalaya River at Krotz Springs, St. Landry Parish, Louisiana, will be received by C. S. Kirkpatrick, Chief Engineer of the New Orleans, Texas & Mexico Railway, 204 Union Station, Houston, Texas, until 10 A.M., Central Standard Time, July 12, 1951, and then publicly opened. The Owner will furnish reinforcing and structural steel at Krotz Springs to raise bridge 6 feet on steel grillages encased in concrete. Further information upon application to C. S. Kirkpatrick, Chief Engineer, 204 Union Station, Houston, Texas.

June 2, 3, 4, 5—1951 . July 1, 2—1951

Bids: July 23, 1951

Air Conditioning for Coffee Shop

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
CONTRACT LGA-170.001

Sealed proposals for furnishing and installing air conditioning for the Coffee Shop in the Domestic Terminal at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M. Monday, July 23, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 5, 1951

Bids: July 18, 1951

Erosion Control Fill and Fill North of Runway B

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-140.007

Sealed proposals for the furnishing, placing and compacting of erosion control fill and the placing and compacting of fill north of Runway B at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:00 P.M. Wednesday, July 18, 1951, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 5, 1951

Bids: August 2, 1951

Construction of Group Camps

Sealed bids will be received by the Palisades Interstate Park Commission until 3:00 P.M., Eastern Daylight Saving Time, August 2, 1951, for the construction of Group Camps in the Twin Lakes Section of Harriman State Park, Orange County, New York.

Full information, plans, specifications and proposals may be secured at Administration Headquarters, Palisades Interstate Park Commission, Bear Mountain, N. Y. Payment for plans is $20.00.

THE COMMISSION RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS RECEIVED.

Bids: July 20, 1951

Passenger Arcade and Expansion of Observation Deck

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-160.002

Sealed proposals for construction of the Passenger Arcade and for the expansion of the Observation Deck at New York International Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:00 P.M. Friday, July 20, 1951, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 5, 1951

U. S. Government

General Services Administration, Public Buildings Service, Washington, D. C., June 26, 1951.—Sealed bids in duplicate for Construction (except elevators) of the Dental School Building at Howard University, W Street, N. W., Washington, D. C., will be received until 1:00 P.M., Standard Time, on July 31, 1951, in Room No. G-341-B, General Services Building, Washington, D. C., and then publicly opened in Room No. 341-D. Bid guarantee is required. If the amount of the contract exceeds $2000, U. S. Standard Form No. 23, Construction Contract, will be used and performance and payment bonds will be required. Upon request one set of Prebid Documents and 4 sets of drawings and Specifications will be supplied without charge to each general contractor interested in bidding on the complete project, all of which must be returned. Not more than six additional sets of drawings and specifications may be obtained by general contractors at a charge of $24.00 per set, which will be returned for each set returned in good condition within 15 days after the bids are opened. Checks offered as payment must be made payable to the order of the Treasurer, U. S. Upon request and in the discretion of the undersigned, one set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested sub-contractor or material firm. Bidding material may be obtained at Room No. 1304, General Services Building, 19th and F Streets, N. W., Washington 25, D. C., Phone EXecutive 4900, Extension 2397. W. E. Reynolds, Commissioner of Public Buildings Service, General Services Administration.

(Continued on page 103)

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS
(Continued from page 102)

Bids: July 11, 1951

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Wednesday, July 11, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the Distgict Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

LETTING OF JULY 11, 1951

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 333 Broadway, Albany, N. Y.				
Rensselaer	FARC51-43	Valley Falls-Johnsonville, S. H. 477 Johnsonville-Buskirk, Pts. 1 & 2, S. H. 8148-1644 Proj. No. F245(2); F173(2)	7.12	Asph. Conc. Ty. 1A, Opt.	$8,500 Plans $10	$146,000
Saratoga	FARC51-35	Schuylerville-Gansevoort, S. H. 1461 Proj. F391(6)	1.81	9" Cem. Conc Pavt. 22'-24' Wide	$14,000 Plans $10	$255,000
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee Street, Utica, N. Y.				
Herkimer	FARC51-41	Little Falls-Herkimer, S. H. 457 Proj. No. F352(12)	4.19	Asph. Conc. Ty. 1A, Opt.	$6,000 Plans $10	$111,000
Montgomery	FARC51-42	Little Falls-Fort Plain, S. H. 8217 Proj. No. F376(3)	3.26	Asph. Conc. Ty. 1A, Opt.	$4,500 Plans $10	$79,000
		DISTRICT No. 3				
		WM. ROBINSON, Dist. Engr., Weigh Lock Bldg., Syracuse, N. Y.				
Cortland	FARC51-13	Cincinnatus, S. H. 377 Proj. No. S339(1)	0.16	Asph. Conc. Ty. 1A, Opt. 2 Sran Alpha I-Beam, 150 ft. Total Alpha Royalty = $152.40	$8,000 Plans $10	$147,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Genesee	FARC51-37 FAC51-4	Corfu-Batavia, S. H. 8283 Batavia City, Pearl Street Proj. No. U377,11)	0.95	Asph. Conc. Ty. 2A	$15,000 Plans $15	$254,000
Genesee	FARC51-44	Batavia-Bergen, Pts. 1, 2, & 3, 11.05 S. H. 8179-8089 Proj. No. F249(6); F96(9)		Asph. Conc. Ty. 1A, Opt.	$14,000 Plans $10	$241,000
		DISTRICT No. 7				
		R. F. HALL, Dist. Engr., 444 Van Duzee Street, Watertown, N. Y.				
Clinton	FARC51-38	Plattsburg-Mooers, Pt. 2, S. H. 259 Proj. No. F578(2)	3.95	Asph. Conc. Ty. 1A, Opt.	$5,000 Plans $10	$89,000
St. Lawrence	FARC51-39	Seven Corr.-Colton, Pt. 2, S. H. 8199 Proj. No. F353(4)	4.42	Asph. Conc. Ty. 1A, Opt.	$8,000 Plans $10	$143,000
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick Street, Binghamton N. Y.				
Sullivan	FARC51-40	Minisink-Narrowsburg, S. H. 1927 Narrowsburg-Callicoon, Pts. 1 & 2, S. H. 8421-8422 Proj. No. F502(12)	4.60	Bit. Macadam, Type 1	$7,000 Plans $10	$121,000
		DISTRICT No. 10				
		J. J. DANCY, Dist. Engr., Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Bronx	FA MDE51-1	Major Deegan Expressway (Contract No. 12) Proj. No. U1082(8)	3.50	Demolition of Bldgs. & Misc. Work	$28,000 Plans $10	$489,000
Suffolk	RC51-3	Amityville Village: Broadway, S. H. 1633 Amityville Village, S. H. 5300	0.68	Asph. Conc. Ty. 1A, Opt. = 0.47 Mi. Misc. Work = 0.21 Mi.	$8,000 Plans $10	$150,000
Suffolk	N. Sag. SP51-4	Sagtikos State Parkway (Contract No. 7)	2.91	9" Unreinf. Cem. Conc. Pavt. 2 at 25' Wide = 2.22 Mi. Misc. Work = 0.69 Mi.	$23,000 Plans $15	$418,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: August 1, 1951
Revised Bid Date

Senior High School

FOR BOARD OF EDUCATION
SYRACUSE, N. Y.

Sealed Proposals Will be Received at the office of the Commissioner of Contract and Purchase of the City of Syracuse, New York, 218 City Hall, Spracuse, New York, on August 1, 1951, until 1:30 p.m., Eastern Daylight Saving Time. On the same day and immediately thereafter, the sealed Proposals will be opened and publicly read by the Commissioner of Contract and Purchase, of the City of Syracuse, New York, 218 City Hall, Syracuse, New York.

The sealed Proposals are to be for:
Contract No. 1—General Construction
Contract No. 2.—Electric
Contract No. 3—Plumbing
Contract No. 4—Heating
Contract No. 5—Sound System
Contract No. 7—Ventilation
For the William Nottingham High School

(previously called East Side High School), located in the 3000-3100 block of East Genesee Street in the City of Syracuse, New York.

A certified check for $100.00 dollars or currency for each set of plans and specifications will be required by the Commissioner of Contract and Purchase from prospective bidders. The certified check or cash will be held by the Commissioner of Contract and Purchase, and, upon the return of the drawings and specifications, will be returned to the bidder.

Structural steel for the building has been let previously and is designated as Contract #6.

U. S. Government

Bids: July 24, 1951:

NOTICE TO CONTRACTORS
UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIES
WASHINGTON, D. C.

Sealed proposals will be received by the District Engineer for the Virgin Islands, Department of the Interior, Post Office Box No. 479, St. Thomas, V. I., until 2:00 P.M., Atlantic Standard Time on July 24, 1951, for the construction of the following hospitals:

Project No. 53-115—Construction of a 4-bed Public Health Facility at St. John, V. I.

Project No. 53-501(2)—Construction of a 12-bed General Hospital at Frederiksted, St. Croix, V. I.

Project No. 53-501(1)—Construction of a 60-bed General Hospital at Christiansted, St. Croix, V. I.

Project No. 53-101—Construction of a 116-bed General Hospital at Charlotte Amalie, St. Thomas, V. I.

At the above time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

The right is reserved, as the interest of the Government may require, to reject any and all bids; to waive any informality in bids received; and to accept or reject any or all items of any bid, unless the bidder qualifies such bid by specific limitation. In the event all bids are rejected, the Government may therefore adopt any of the authorized procedures such as readvertisement, negotiation with rejected bidders and others, or postponement of the project. The government also reserves the right to award contracts for the various items on the basis of the basic bid or by the adoption of any or all the "Deductible Alternates", whichever is in the best interests of the United States.

Plans and specifications and other proposed contract documents are open for public inspection at the Office of the District Engineer for the Virgin Islands, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston, Massachusetts; Lester M. Marx, Special Assistant to the Director, Room 2713 Interior Building, Washington 25, D. C.; U. S. Department of Commerce No. 2, Puerto Rican Reconstruction Administration Ground, Building N, San Juan, Puerto Rico; AGC Office, 1113 Congress Building, Miami 32, Florida; Builders' Exchange, 46 NE 6th Street, Miami, Florida; and F. W. Dodge Corporation, 119 West 40th Street, New York City, N. Y. A set of such documents may be procured from any of the first three above-listed offices upon deposit of $50.00, by certified check payable to the United States of America, all of which will be returned to bonafide bidders upon the return of plans and specifications in good condition within seven days of date of bid opening.

Each proposal must be accompanied by a bid security in an amount not less than 5 percent of the total bid.

Subject to available appropriation, awards will be made on one, any, or all buildings, with or without the deductible alternates specified in the contract documents.

The successful bidders will be required to furnish performance bonds in an amount equal to 100 percent of their bids and payment bonds in an amount equal to 100 percent of their bids; such bonds to cover full performance of the contracts and payments for labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 45 days.

LESTER M. MARX
Contracting Officer
Office of Territories

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3475) will be received by the Bureau of Reclamation, Denver, Colorado, until July 31, 1951, and then publicly opened for furnishing two 84-inch butterfly valves, complete, for Flatiron Power and Pumping Plant, Colorado-Big Thompson Project, Colorado. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 104)

OFFICIAL PROPOSALS
(Continued from page 103)

Bids: July 31, 1951

Heating and Ventilating Equipment
CONTRACT 327

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A. M., Eastern Standard Time, on Tuesday, July 31, 1951, for Contract 327, for furnishing, delivering, installing and testing heating, ventilating and appurtenant equipment for the Roundout, West Branch and Kensico South effluent chambers, and heating equipment with appurtenances for the drainage chamber at Shaft 13, the coagulating plant at Shafts 17 and the Kensico comfort station, and for performing appurtenant miscellaneous construction, all as set forth in the specifications. The locations of the proposed work are in the Towns of Wawarsing, Ulster county, Carmel, Putnam county and Bedford, North Castle and Mount Pleasant, Westchester county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of ten thousand dollars ($10,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS H. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: July 17, 1951

Route Construction
STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 6, SECTION 9B

Construction of Route 6, Section 9B, Widening and Northwest Ramp at Valley Road, in the Township of Little Falls and the City of Clifton, Passaic County, Federal Project No. U-131(10). Length 0.268 mile.

Roadway Items

Estimated:
- 2,732 cu. yds. Roadway Excavation-Earth
- 9,039 cu. yds. Borrow Excavation
- 4,201 sq. yds. Waterbound Macadam Base
- 3,662 sq. yds. Waterbound Macadam Inter. Course
- 1,512 sq. yds. Concrete Base
- 600 tons Pavement, Type MA-BC-1

Bridge Items
- 759 cu. yds. Concrete in Structures
- 21,415 lbs. Reinforcement Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, July 17, 1951, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 646, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Fulton and Paterson Streets, Paterson, New Jersey, or 88 Park Place, Passaic, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: July 17, 1951

Route Construction
STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 83, SECTION 5B

Construction of Route 83, Section 5B, Eastbound Connection to Route 17, Borough of Rutherford, Bergen County.

Estimated:
- 5,800 cu. yds. Roadway Excavation
- 1,200 sq. yds. Waterbound Macadam
- 243 tons Type MA-BC-1
- 1,400 lin. ft. White Concrete Vertical Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 17, 1951, at ten o'clock (10:00 A.M. —EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

OFFICIAL PROPOSALS

Bids: July 27, 1951:

NOTICE TO CONTRACTORS
UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIES
WASHINGTON, D. C.

Sealed proposals will be received by the District Engineer for the Virgin Islands, Department of the Interior, Post Office Box No. 479, St. Thomas, Virgin Islands, until 2:00 P.M. Atlantic Standard Time on July 27, 1951, for the construction of the following work at St. John, Virgin Islands, comprising approximately the following quantities in the major items:

PROJECT NO. 53-104—POTABLE WATER FACILITIES, ST. JOHN, Virgin Islands
- 2,700 Sq. Yds.—3" Concrete Catchment Pavement
- 850 Lin. Ft.—Masonry Catchment Wall and Fence
- 1 Ea.—100,000 Gallon Concrete Reservoir
- 1 Ea.—25,000 Gallon Masonry Reservoir
- 900 Lin. Ft.—C. I. Pipe (2" to 8")

At above time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

The right is reserved, as the interest of the Government may require, to reject any and all bids; to waive any informality in bids received; and to accept or reject any or all items of any bid, unless the bidder qualifies such bid by specific limitation. In the event all bids are rejected, the Government may therefore adopt any of the authorized procedures such as readvertisement, negotiation with rejected bidders and others, or postponement of the project. The Government also reserves the right to award contracts for the Cruz Bay water facility or the Bordeaux water facility or for both water facilities whichever is in the best interests of the United States.

Plans and specifications and other proposed contract documents are open for public inspection at the Office of the District Engineer for the Virgin Islands, Thomas G. Mooney, Charlotte Amalie, St. Thomas, Virgin Islands; R. L. Kenan and Associates, Consulting Engineers, Bell Building, Montgomery, Alabama; U. S. Department of Commerce No. 2, Puerto Rican Reconstruction Administration Ground, Building N, San Juan, Puerto Rico; Lester M. Marx, Special Assistant to the Director, Room 2713, Interior Building, Washington 25, D. C.; AGC Office, 1113 Congress Building, Miami 32, Florida; Builders' Exchange, 46 Northeast 6th Street, Miami, Florida; and F. W. Dodge Corporation, 119 W. 40th Street, New York City, N. Y.

A set of such documents may be procured from the first two of the above-listed offices upon deposit of $20.00 by certified check payable to the United States of America, all of which will be refunded to bonafide bidders upon the return of plans and specifications in good condition, within seven days from date of bid opening.

To parties who procure plans and specifications upon payment of $20.00 and who do not submit a bid, $15.00 will be refunded provided same are returned within seven days from date of bid opening. No refund will be made for return after this time.

Each proposal must be accompanied by a bid security in an amount of not less than 5 percent of the total bid.

The successful bidder will be required to furnish a performance bond in an amount equal to 100 percent of the contract price, and a payment bond in an amount equal to 100 percent of the contract price, such bonds to cover full performance of the contract and payment for labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 30 days.

LESTER M. MARX
Contracting Officer
Office of Territories

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3468) will be received by Bureau of Reclamation, Denver, Colorado, until July 24, 1951, and then publicly opened for furnishing labor and materials and performing all work for furnishing and installing one electrically operated elevator, complete, at Hungry Horse Power Plant. The work is situated on the south fork of the Flathead River 9 mi. southeast of Columbia Falls, Montana. Time allowed for completion will be 360 days. For particulars, address Bureau of Reclamation, Columbia Falls, Montana; or Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 105)

OFFICIAL PROPOSALS

Bids: July 26, 1951

8 M.G.D. Sewage Treatment Plant and Pumping Station

Sealed bids will be received by the Board of Supervisors of Fairfax County, Virginia, at the Office of Sanitary Engineer, County of Fairfax, VEPCO Building, Fairfax, Virginia, until 2:00 o'clock, P.M., Eastern Daylight Saving Time, Thursday, July 26, 1951, for the construction of an 8 M.G.D. sewage treatment plant and a pumping station, known as "Contract No. 1", and promptly thereafter they will be publicly opened and read in the Board of Supervisors' Room, County Office Building, Fairfax, Virginia.

The principal units include grit removal, pumping, aeration, settling, chlorination, and sludge heating, digestion, conditioning, dewatering through filters, drying, grinding and storage. The contract is for the complete construction, including general structures, mechanical, electrical, heating and ventilating and plumbing.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, at the offices of various chapters of the Associated General Contractors and various Builders' Exchanges in Charlotte, N. C.; Raleigh, N. C.; Greensboro, N. C.; Columbia, S. C.; Baltimore, Md.; Richmond, Va.; Norfolk, Va.; Washington, D. C., and at the offices of the Dixie Contractor, Atlanta, Ga. Copies thereof may be obtained from Massey Engineers, Consultants, For Building, Fairfax, Virginia, upon deposit of $50.00. Refund of entire deposit will be made in case of actual bidders who return the documents in good condition within two weeks after the bidding date, and refund of 50% of deposit will be made in case of all others who return the documents in good condition within two weeks after bidding date.

Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered. Each bid must be accompanied by a bid bond or certified check made payable to the Treasurer of Fairfax County, Virginia, in the amount of at least 5% of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract will be specified by the bidder and a bonus or penalty, as the case may be, will be applied for each day elapsing between the specified completion date and the actual completion date.

In view of the uncertainties of the cost of labor, material and equipment which may prevail during the life of the contract, and the desire to safeguard the mutual interests of the Owner and Contractor, payments will be made in accordance with the lump sum price bid, plus or minus an adjustment, not to exceed 15%, based upon any changes in ENR CONSTRUCTION Cost Index during the life of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

May 30, 1951

Bids: July 17 1951

Extensions and Improvements to the Rockaway Valley Sewage Treatment Plant

General Construction—Contract 1
Electrical Work—Contract 1E
Heating and Ventilating—Contract 1H
Plumbing—Contract 1P
Jersey City New Jersey

Sealed proposals will be received by the Board of Commissioners of Jersey City July 17, 1951 at 10:30 A.M. (official Jersey City time) in the assembly chamber, City Hall, Jersey City, for Extensions and Improvements to the Rockaway Valley Sewage Treatment Plant, General Construction, Contract 1; Electrical Work, Contract 1E; Heating and Ventilating, Contract 1H; Plumbing, Contract 1P.

Copies of the plans and specifications and blank proposals may be examined at the office of the City Clerk, City Hall, Jersey City, New Jersey or at the office of Havens and Emerson, Room 1414, Woolworth Building, 233 Broadway, New York 7, New York after Friday, June 22nd, 1951.

Plans, specifications and proposal form may be obtained at the office of Havens and Emerson, Room 1414, Woolworth Building, 233 Broadway, New York, New York. A deposit of fifty dollars will be required for each set of plans and specifications taken from the above office. The entire deposit will be refunded if a bid is submitted and the plans and specifications are returned in good condition on or before July 16th, 1951. After that date no plans or specifications will be redeemed and the entire cash deposit shall be forfeited. Where no bid is submitted and the plans are returned on or before the date hereinbefore specified, only one half entire deposit shall be returned.

Extra copies of Specifications may be obtained at the cost of fifteen dollars each and extra sets of Plans may be obtained at the cost of twenty-five dollars each, which sums will not be refunded.

Each proposal must be accompanied by a certified check or cashier's check in the following sum:

General Construction, Contract 1, $25,000.00.

Electrical Work, Contract 1E, $1,000.00.

Heating & Ventilating, Contract 1H, $500.00.

Plumbing, Contract 1P, $500.00.

drawn on a solvent bank; such check to be made payable to the City of Jersey City, and to be by it held as a guaranty that in the event the bid is accepted and a contract awarded to the bidder, the contract will be duly executed and its performance properly secured; and in default thereof, said check and the amount represented thereby will be forfeited to the City of Jersey City as liquidated damages.

The successful bidder will be required to furnish a bond for the faithful performance of the contract in a sum not less than one hundred percent of the total price bid for the completed work, said bond to be that of an approved surety company authorized to transact business in the State of New Jersey. The bond shall be purchased through a surety company with a local agent upon whom service of process can be made.

Each proposal must be made upon the blanks furnished with the contract drawings and specifications and it must be enclosed in a sealed envelope and endorsed "Proposal for the Extension and Improvements to the Rockaway Valley Sewage Treatment Plant, Contract # " directed to this Board and handed to the City Clerk in open meeting when called for in the order of business relating to sealed proposals.

Proposals must be accompanied by the bidder's affidavit referred to in the Instructions to Bidders. Each bidder who is a foreign corporation, that is a corporation not chartered under the laws of the State of New Jersey but licensed to do business in the State of New Jersey, must submit with his bid an affidavit duly executed by the President, Vice President or General Manager of the corporation, stating in said affidavit that said corporation has, in accordance with the laws of the State of New Jersey, obtained a certificate authorizing it to do business in the State of New Jersey.

The City reserves the right to reject any and all bids, to waive any informalities or irregularities in the bids received, and to accept any bid which is deemed most favorable to the City of Jersey City, New Jersey, at the time and under the conditions stipulated.

BY ORDER OF THE BOARD OF COMMISSIONERS OF JERSEY CITY

Dated, City Clerks Office,
Jersey City, June 19, 1951
James A. Tumulty, City Clerk

Bids: July 17, 1951

General Construction Work

ELMIRA HOUSING AUTHORITY
PROJECT NYS 17-B

Sealed proposals will be received at the Office of the Elmira Housing Authority, 346 Woodlawn Avenue, Elmira, N. Y., until 1:00 P.M., E.D.S.T. on July 17, 1951 and immediately will be opened and publicly read aloud.

The sealed proposals are to be for:

Contract No. 5-6—Foundations & General Construction Work

Contract No. 13—Street & Yard Improvement

For Elmira Housing Project N. Y.—17B located in the City of Elmira, New York, contained in an area bounded by Clinton, Baldwin, & Dickinson Streets and the Elmira Neighborhood House as indicated on detailed Site Plan included with contract documents.

On and after June 25, 1951, the contract documents may be examined at the office of the Elmira Housing Authority, 346 Woodlawn Avenue, Elmira, or at the office of the Architects, Haskell, Considine, & Haskell, 612 Hulett Building, Elmira, N. Y. Additional copies thereof may be obtained from the Architects upon payment of $25.00 as a deposit for the safe return thereof. If a proposal is submitted by the depositor, the full amount of such deposit for one set will be returned to the depositor providing the set is returned in good condition within 30 days following the date of opening bids. Upon return of additional sets in good condition within such period by a depositor who has submitted a proposal reimbursement will be made in the full amount. Sets returned by non-bidders will be reimbursed to the extent of $24.00 for each set.

Checks offered in payment for the documents shall be made payable to the order of the Elmira Housing Authority.

On a date to be selected later, approximately 10 days before bid openings, a Contractor's meeting will be held at the office of the Authority at which time all Contractors may bring up questions relating to this Project.

ELMIRA HOUSING AUTHORITY
By: J. BERTRAM COMSTOCK,
Chairman

Bids: July 17, 1951

Well Pumping Stations

Sealed bids will be received until 9:00 A.M. EST July 17 A. D., 1951, in the office of City Auditor & Clerk for: Well Pumping Stations, Wells, Pumps & Appurtenances.

Bidding blanks may be obtained from the office of the Engineers. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications and of $15.00 each for additional copies of plans and specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 5% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids.

R. K. Lowry
City Manager

Bids: July 17, 1951

Raw Water Mains

Sealed bids will be received until 9:00 A.M. EST July 17 A. D., 1951, in the office of City Auditor & Clerk for: Raw Water Mains & Secondary Distribution.

Bidding blanks may be obtained from the office of the Engineer. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications, and of $15.00 for each additional copies of plans and specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 5% of the total amount of the bid made payable to: City of Fort Lauderdale, Florida shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids.

Bidders may bid on both Sections I and II or on Section I and II separately.

R. K. Lowry
City Manager

DRAFTSMEN • DESIGNERS • ENGINEERS

needed for essential work on the national Atomic Energy Program at

THE LOS ALAMOS SCIENTIFIC LABORATORY

Los Alamos, New Mexico

operated by the

UNIVERSITY OF CALIFORNIA

for the

Atomic Energy Commission

In The Mountains of Northern New Mexico

- 2 DAYS CUMULATIVE PAID VACATION PER MONTH
- 1½ DAYS CUMULATIVE PAID SICK LEAVE PER MONTH
- HOUSING AVAILABLE AT REASONABLE RENTAL
- MOVING EXPENSES PAID

Write to

E. W. Doty, Los Alamos Scientific Laboratory,

Los Alamos, New Mexico

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-1101, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CO-ORDINATING ENGINEER

Graduate Mechanical or Civil Engineer with at least 10 years' experience in industrial construction and design work including experience in building with structural steel and reinforced concrete. Age between 35-45 years. Give background and full qualifications in first letter, present salary and salary expected.

J. T. BAKER CHEMICAL CO.
Phillipsburg, New Jersey

WANTED ENGINEERS

. . . to train as . . .

Industrial Consultants in Fire Protection Engineering

full pay to start—complete training field engineering with top U. S. and Canadian industry—usual pension and other benefits. Permanent.

Write complete qualifications to

P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT

Wanted Construction Superintendent to supervise contractors on construction of hydro-electric project in South America. Must have working knowledge of Spanish and experience in transmission lines, substation, power plant, steel penstock, and rock tunnel work. Three years work. Give experience record, date available, family status and minimum salary expected.

P-1122, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICES

GOLDEN OPPORTUNITY for civil engineers: Fast growing, prosperous, nationally-recognized Montgomery County, Maryland, has permanent promising merit system position openings in the Department of Public Works as junior, associate, senior, design, and construction engineers with salaries ranging from $3240 to $6240 per year. Junior planner position, $3500-4424, with division of planning also open. Write or wire Personnel Office, Court House, Rockville, Maryland.

TOWN ENGINEER Wanted:—Civil Engineer for the position of Town Engineer in the Town of Hamden, Connecticut. Must have had a minimum of five years of progressively responsible experience in engineering work, including experience in municipal affairs. Applicant must have professional engineering and land surveyor's licenses issued by the State of Connecticut or be eligible for said licenses in the State of Connecticut. For details and application write to the Board of Selectmen, Town of Hamden, Connecticut. Applications will be accepted from any eligible person in the United States.

WANTED: BY Missouri State Highway Department, Jefferson City, Missouri, several experienced detailers and designers on reinforced concrete and steel bridges. Permanent position. Give complete details of education and experience.

POSITIONS VACANT

ENGINEERS WITH experience in preparation of plans for sewage and water treatment projects or related experience. Location Northwestern Ohio. P-1154, Engineering News-Record.

CIVIL ENGINEER — Experienced in design, layout and specifications for utilities. Must have been in charge of draftsmen. Permanent position and wonderful opportunity for man who can qualify. Write in detail giving age, military and marital status, experience and references. P-1226, Engineering News-Record.

STRUCTURAL ENGINEERS experienced in designing, checking and detailing Bridges, Buildings and Special Structures. Send complete experience record. Interview by appointment only. Ammann & Whitney, Consulting Engineers, 76 Ninth Avenue, New York 11, N. Y.

DETAILER AND Checker — experienced in making and checking shop details for steel fabrication plant. All types of steel construction. State experience, references, and rate expected. Savannah Machine and Foundry Company, P. O. Box 590, Savannah, Ga.

YOUNG CIVIL engineer, interested in concrete. Send complete information to Scientific Concrete Service Corporation, 724 Salem Avenue, Elizabeth 3, N. J.

WANTED — SUPERINTENDENT or Manager for Lowell, Michigan, (population 2400) Light and Water Works, having both hydro and diesel generating plants. Graduate electrical engineer preferred but not necessary. Please state qualifications, experience, references and salary expected in first letter. All correspondence will be held in confidence if requested. Reply to W. A. Roth, Chairman, Lowell Light and Power Committee, 202-206 Main Street, Lowell, Michigan.

(Continued on page 108)

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-1102, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS, DRAFTSMEN, ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-9872, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS WANTED

The Tennessee Valley Authority wants Civil, Structural, Mechanical, Electrical and Office Engineers. The work is design and construction of large steam-electric and hydroelectric projects and transmission systems. Salaries start at $3200, $3900 and $4650 for 40-hour week. Some work is scheduled more than 40 hours and pays overtime. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave (26 days), sick leave and retirement benefits. Design jobs are in Knoxville and Chattanooga, Tennessee. Field and office engineer jobs are at construction sites in the Tennessee Valley area and at Paducah, Kentucky. Write the Tennessee Valley Authority, Division of Personnel, Knoxville, Tennessee.

CONSTRUCTION SUP'T & ENGINEER

Technical college graduate well-exp'd in building construction & installation of equipment; willing to travel to locations in United States. State age, salary expected, experience in detail and data available to begin work.

Write box ENR 296,
221 W. 41 St., New York 18, N. Y.

GOOD POSITIONS FOR ENGINEERS, DETAILERS AND DRAFTSMEN

On Sewage, Water, Highway and Traffic Projects

Apply to

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Harrisburg, Pa.

DESIGNERS ENGINEERS

We pay among the highest rates in the industry

Our employees share annually in company profits

Must be willing to relocate in Cleveland, Ohio, Union, N. J.
Permanent employment

Our continuous expansion and growth offers many fine future opportunities.

We need Designers experienced in Blast Furnace, Steel Mill or Oil Refinery Design.

Men with specific experience, training and background in the following classifications:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
ENGINEERING DESIGNERS
CHECKERS

Our working conditions are the best; our offices are air-conditioned and well-lighted.

We want men who have a genuine desire to develop and advance.

ARTHUR G. McKEE & COMPANY

2300 Chester Avenue — Cleveland 1, Ohio

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical	Power, lighting layouts and electrical controls.
Mechanical	Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.
Structural	Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders

The Ferguson Bldg. 1783 E. 11th St., Cleveland 14, Ohio
19 Rector Street, New York 6, N. Y.

WANTED

HYDRAULIC SALES ENGINEER

Opportunity to earn $15,000.00 first year salary and commission. Must have at least five years sales experience New York Industrial Market and ability to head pump division of well established machinery concern. Unless you have initiative and are a "go getter" please do not reply.

SW-1162, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SALES ENGINEER

Excellent opportunity, Middlewest

Must be able to sell new subcontracts for building work, also supervise generally installation crews. Prefer young man with some experience concrete or masonry work industrial building construction. Advise fully, qualifications, education, experience, age, salary earned and expected.

P-1186, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED

Construction Personnel for Dam Construction Project Government of Punjab, (India)

Applicants must have served for extended periods in the respective capacity on construction of dams:

1) Design Engineer for Power House
1) Design Specialist for High Dams
1) Tunnel Foreman
2) Concreting Foremen
2) Mechanical Engineers
1) Master Mechanic
1) Mechanical Foreman
2) Mechanical Foremen for Workshops
1) Electrical Foreman

Apply by mail in triplicate to the Director, India Supply Mission, 635 F Street, N. W., Washington 4, D. C., giving full details of qualifications and experience stating minimum terms of salary acceptable. Quarters with electricity and water supply available in the Project Township.

ELECTRICAL ENGINEER

Graduate Electrical Engineer from upper half of class from recognized college. Age between 22-26. No previous experience required. Permanent with chance of advancement. Give full qualifications first letter, also salary expected.

J. T. BAKER CHEMICAL CO.
Phillipsburg, New Jersey

WANTED

STRUCTURAL DESIGNER

By a large American oil company in South America.
Should have college degree and approximately 5 years' experience in drafting and design of structures of steel, timber, and reinforced concrete.
Write giving age, education, marital status, and complete details of past experience. Your reply will be held in strict confidence.

BOX 308-X
RADIO CITY STATION
NEW YORK 19, NEW YORK

WANTED

Experienced General Foremen

. . . . for high type sub-base and macadam penetration pavement on New Jersey Turnpike. Must be producer. Wages comparable to ability. Contact:

S. J. GROVES & SONS CO.
Swedsboro, New Jersey
for personal interview.

Also

. . . . other **Construction Foremen** with Highway experience needed.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS
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- Complete Structural Engineering Course.
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Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

PLANT & MAINTENANCE ENGINEER

Experienced, for work in Continental United States. Some traveling necessary. State salary expected, age, experience, and date available for work. Write

Box ENR 294,
221 W. 41 St., New York 18, N. Y.

SUPERINTENDENT

Experienced in heavy construction, excavation and drainage. Permanent position with well-established firm on Long Island, N. Y. Salary open. Reply giving age, resume of experience and salary requirements to

P. O. Box 278, Hicksville, N. Y.

WANTED
BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS

Experienced men wanted. State qualifications, age, salary and date available in first letter. Location, Western Pennsylvania.

P-9982, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITION VACANT

(Continued from page 106)

ESTIMATOR — EXPERIENCED in quantity estimating of industrial structures. Permanent position. Extensive travel. State all qualifications first letter. P-1202, Engineering News-Record.

EMPLOYMENT AGENCY

WANTED—ENGINEERS, Designers, Draftsmen-Structural, Piping, M.E., C.E., E.E. and Industrial, also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

CONSTRUCTION EXECUTIVE, 50. Capable of managing an entire business. Thoroughly experienced with buildings, machinery installation, process piping and heavy construction projects. Actual superintendent and project manager, background on large jobs. PW-9580, Engineering News-Record.

MAINTENANCE SUPERVISOR with long experience and proved ability to direct field, shop and new installations also purchases and control of supplies on large construction projects. PW-1248, Engineering News-Record.

EQUIPMENT SUPERINTENDENT, 50. Over 20 years experience operation and maintenance of heavy equipment. Well experienced heavy rigging, dirt work and underground installations. PW-1242, Engineering News-Record.

CIVIL ENGINEER—Age 29, married. 1 yr. bldg. construction, 1½ yrs. design of concrete hydraulic structures. Desires permanent position with consulting firm located in Middle West or eastern Rockies. PW-1243, Engineering News-Record.

ASPHALT—CHEMICAL engineer with extended experience in paving technology, road construction, properties and application of asphalt in all forms, manufacturing and product development, emulsions, specialties, additives, road oils, roofing, seeks supervisory position. Available August first. PW-1244, Engineering News-Record.

ENGINEER—B.A. degree. Single. 3 years experience in supervision of aircraft maintenance and heavy equipment. 5 years experience in hydraulic engineering. Fluent Italian. Desire foreign position in engineering sales field. PW-1098, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS WANTED

DIVER—C. F. Logan. Construction and salvage; subaqueous reports; qualified to make underwater surveys for engineers. Capable of organizing equipment and personnel for special underwater jobs. 118 E. Bay St., Jacksonville, Florida. Phone 6-3473.

CHIEF ESTIMATOR—General Superintendent-Project Manager: Available to General Contractor with right proposition. Currently associated with large General Contractor but desirous of change. Salary in $15,000.00 per annum bracket. PW-1093, Engineering News-Record.

SUPERINTENDENT OR General Foreman 28 years, experience concrete field Batch, crushing, block, and precast. Placing and handling heavy construction. PW-1109, Engineering News-Record.

STRUCTURAL DESIGNER P.E. N. Y. State. Now employed desires responsible position with contractor or consulting engineer. Location Metropolitan N. Y. C. only. Available about August 5. PW-1232, Engineering News-Record.

FIELD ENGINEER — party chief desires traveling position. 2 yrs. college, 4 yrs. field and some office exp. Age 25, married, 1948 car. PW-1208, Engineering News-Record.

OFFICE MANAGER; contractor's or engineer's assistant; Sales or Allied Field. 15 years Supt., Project Eng., field office Mgr. for Pipeline construction. Now employed, desire change to inside or sales assignment. Excellent references, aggressive pleasant personality. Available anywhere. P. O. Box 2225, Roanoke, Virginia.

CIVIL ENGINEER, 43. Prof. Engr. and Lic. Land Surveyor. 20 years experience water tunnels, pipe lines, sewers, sewage plant, highway and bridge surveys and construction. Top-notch field man layout and property surveys. Some design. Good estimator, computer, draftsman. Desires position with municipality, contractor or association with engineer, radius 50 miles N.Y.C. PW-1194, Engineering News-Record.

CONSTRUCTION EXECUTIVE. Administrative Architect, Project Manager and Contact Man. Designer of Architectural and Industrial Type Buildings. 23 years experience in architecture, engineering, general contracting, and property management. Long in-full-charge of work experience. Graduate Architect-Engineer. Registered. PW-1240, Engineering News-Record.

MECHANICAL ENGINEER, ten years design experience all branches building mechanical work. Registered, graduate. Desires association with architect-engineer on defense work. Free to travel. PW-1182, Engineering News-Record.

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK.
Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

SEARCHLIGHT SECTION

Acchione Contracting Co. 112
Acme Equipment Co., Inc. 117
Air Compressor Rental Co. 114
Alabama Dry Dock & Shipbuilding Co. 114
Albert Pipe Supply Co., Inc. 116
Allegheny Contracting Co. 116
Albro Steel Co. 114
American Air Compressor Corp. 110
American News Co., Inc., The 117
Amerlux Steel Products Corp. 116
Anderson Co., W. H. 116

Baker Chemical Co., J. T. 106, 108
Bauer, L. W. 109
Bendix Machinery Co. 113, 115
Birch Hill Development Co. 112, 115
Bixby Inc., R. W. 108
Boots, J. L. 114
Booth & Olson, Inc. 117
Boyer, R. H. 112
Brookfield Construction Co., Inc. 112
Brunson Instrument Co., Inc. 109
Bucks County Construction Co. 116
Buff 109
Burke, Inc., Cyril J. 115

Campanella & Cardi Construction Co. 112
Carlin, Inc., R. S. 112
Clark, Murray A. 116
Contractors Machinery Co. 110
Couse & Co., Walter L. 112

Darien Corp. 116
Davidson Pipe Co., Inc. 116
Day & Maddock Co. 115
Drachman Steel Corp., Hy. 110
Dyer Co., Inc., W. H. 114

Ellis Co. 115
Equipment Corp., of America 113

Falls City Sales Co. 110, 114
Ferguson Co., H. K. 107
Forsythe Equipment Co., Inc. 117
Fort Neck Const. Co., Inc. 115
Foster Co., L. B. 116
Frank, M. K. 114

Gannett, Fleming Corddry & Carpenter, Inc. 107
General 114
General Equipment Co. 110
Glenside Ready-Mixed Concrete 109
Greenpoint Iron & Pipe Co., Inc. 116
Greensberg Machine Co. 113
Groves & Sons & Co., S. J. 108, 113, 114, 115
Guion, H. P. 117

Hickerson, Roy D. 109
Hodge & Hammond, Inc. 110
Horwitz Pipe & Steel Co. 116
Hower Co., Shuman J. 115
Hyman-Michaels Co. 116

India Supply Mission 108

Koch Erecting Co., Karl 109

Larsen Piling Corp. 116
Long Island Structural Steel Co., Inc. 115
Lorenz Equipment Co., The 114
Los Almos Scientific Laboratory 106

Mason Co., Silas 114, 115
Malone Co., Leonard 109
McKee & Co., Arthur G. 107
Miceli, John 109
Mississippi Valley Equipment Co. 113, 116
Montgomery Engineering Co. 112
Morrison Railway & Supply Corp. 114

National Blue Print Co. 109

O'Neill, A. J. 112

Sabolt, Inc. 112
Schoonmaker Co., Inc., A. G. 110
Smith Inc., L. B. 111
Southworth Tractor & Machinery Co., T. 113
Sheldon, James E. 109
Sherman Transfer Co., Roger 117
Stanhope Inc., R. C. 113, 115

Tennessee Valley Authority 107
Tractor & Equipment Co. 113
Tuller Construction Co., The 110, 112, 114, 115

Vilbro Equipment Co., Inc. 114
Vulcan Iron Works 110

Wagner Crane Service 112
Walsh Richard P. 110
Warren-Knight Co. 109
Weiss Co., B. M. 110
Williams Co., The W. W. 113
Wilson Engineering Corp. 108
Wing & Son Corp., R. B. 112

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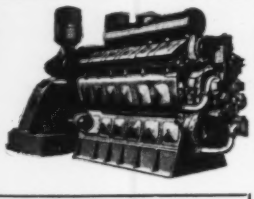

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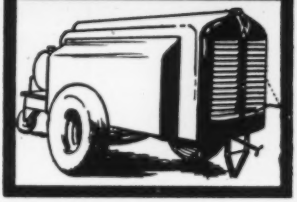

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FS-1219, Engineering News-Record
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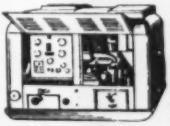

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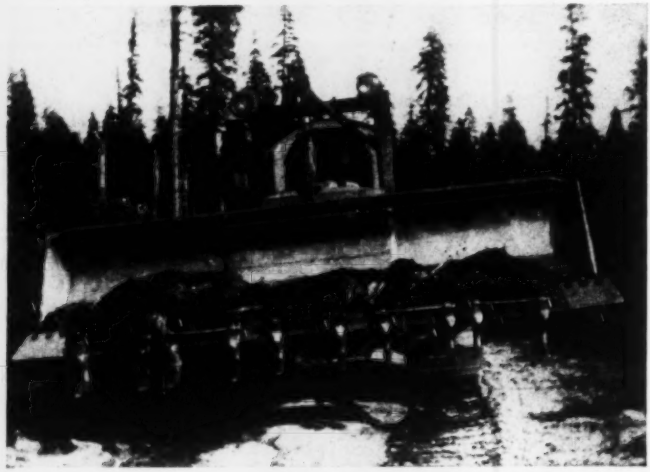
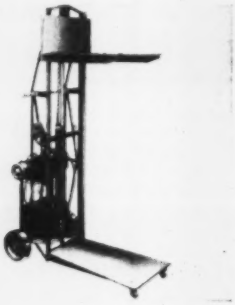


Dozer attachment permits simultaneous ripping, dozing

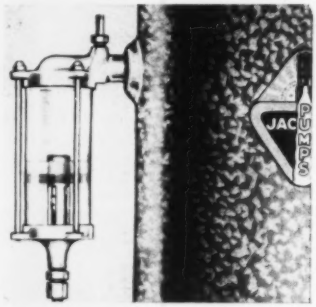
RIPPER ATTACHMENT for bulldozers saved 62% on roadbed leveling costs in California's Shasta National Park. Five Hensley rippers attached to the blade of a 13-ft LeTourneau Angledozer uprooted about 75 ft of brush in each run at a cost of $60.00 per mi. Hand-grubbing costs had been running $160 per mi. The rippers removed heavy brush and numerous 3 and 4-ft boulders in the widening of an access road.

The Hensley rippers are available in 12 models to fit all standard bulldozers and scrapers. They are easily transportable and quickly attached. On the back of each shank is an I-bolt that fastens to a small bracket welded to the back of the blade. The rippers have reversible, self-sharpening boots resistant to wear and abrasion. Shanks are angled to automatically dig into rock, shale, or soil. The rippers will dig to a depth of 12 in. in one pass if there is not an excessive amount of rock in the surface. —HENSLEY EQUIPMENT CO., 878 JOAQUIN AVE., SAN LEANDRO, CALIF.



Dual-purpose truck

Combination fork-lift-stacker and hand truck with elevating platform is operated from a 6-v automotive battery. It will handle loads up to 750 lb. Hydraulic lift is operated by a battery-activated motor mechanism. Built-in battery charger can be plugged into any standard outlet. Platform is 21x18 in.—CLARK-HOPKINS EQUIP. CORP., 1125 SPRING GARDEN ST., PHILA., PA.

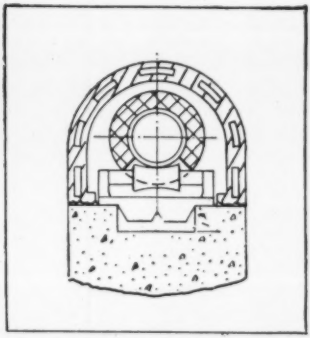


Tank-pressure reliever

Supercharger is said to eliminate tank water-logging caused by tanks being filled too completely. It insures that there will be a sufficient cushion of air above the water to provide pressure. It is said to automatically maintain proper balance between air and water in the tank, preventing frequent starts and stops of the pump.—JACUZZI BROS., INC., RICHMOND, CALIF.

Water repellent

Silicone-base water repellent is designed for use on uncoated exterior masonry walls. Monoseal is said to penetrate from ¼ to ⅜ in. It is a transparent, colorless, thin liquid and can be applied by brush or spray. The silicone is said to coat the pores and still permit the masonry to breathe. It is impervious to oxidation and prevents efflorescence. — THE MONROE CO., INC., DEPT. M-1, 10703 QUEBEC AVE., CLEVELAND 6, OHIO.



Underground pipe conduit

U-Tile conduit is designed for one-pipe installations, or for installations having several small pipes. They are shipped as flattened cylinders scored longitudinally on both of the flattened sides. Tapping over each scoring with a hammer splits the cylinders into two "U" tiles. (A half is shown in the illustration.) A circumferential scoring at one end of each tile when chipped off provides a rough-edged bevel that permits the jointing mortar to key and bond into the channels formed within the tile sections.—THE PORTER-HAYDEN CO., 825 FRELINGHUYSEN AVE., NEWARK 5, N. J.

Graphite ground anode

The 3x60-in. National graphite ground anode features an increased amount of graphite per unit of exposed surface. These anodes are recommended for cathodic protection of pipe lines and other underground and underwater metal structures. They are furnished complete with 36-in. long insulated No. 8 weatherproof cable.—NATIONAL CARBON CO., DIV. UNION CARBIDE & CARBON CORP., 30 E. 42ND ST., NEW YORK 17, N. Y.

Forged-steel gate valve

Designed for high-pressure service, the R-P&C gate valve features bolted

(*Continued on page 120*)

GOOD BRICKWORK = GOOD DESIGN + GOOD WORKMANSHIP + GOOD MATERIALS

Plenty of mortar should be thrown on the end of the brick to be placed. The brick should then be pushed into place, so that mortar oozes out of the head joint.

When dabs of mortar are spotted on the corners of the brick, the mortar does not completely fill the head joint, and voids are still left.

FULL HEAD JOINTS, WITH BRIXMENT, HELP PREVENT LEAKY WALLS

WE SUGGEST THAT—

All head joints in both face brick and back-up work should be completely filled with mortar. If head joints are not completely filled, water may penetrate to the inside of the wall through openings in the joints. Dabs of mortar spotted on the corners of the brick are not nearly enough to fill the joints.

Take a look at the two examples shown at the left, and you'll instantly see why full head joints are an essential part of *good workmanship* in bricklaying.

No mortar material alone, not even Brixment, can make watertight masonry walls, so long as open crevices and pockets are left in the mortar joints.

Brixment mortar makes it far easier for the bricklayer to do good work. It is smooth and plastic — so soft and workable that the bricklayer can use enough mortar to fill the joint, and still "place" the brick easily and accurately to the line.

Brixment mortar has greater plasticity, higher water-retaining capacity and bonding quality, greater resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

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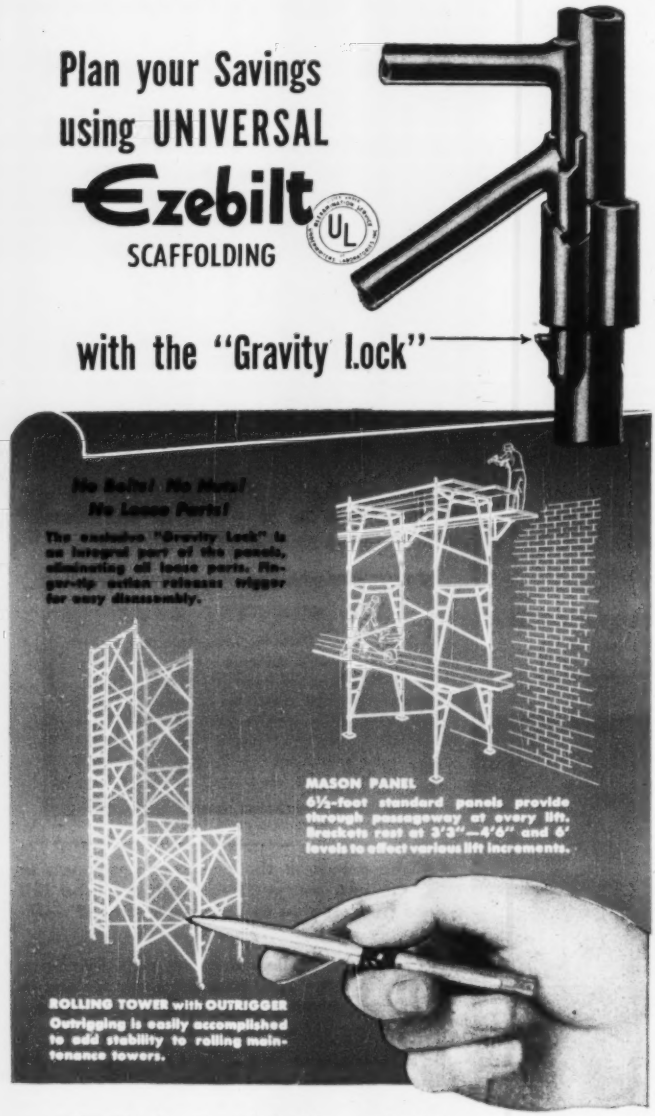
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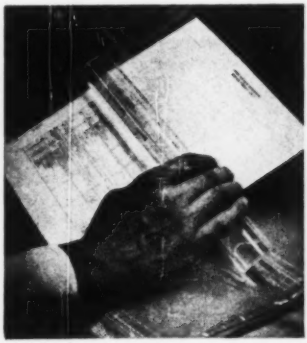
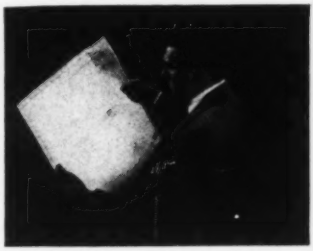
bonnet, tongue-and-groove joint with soft-iron gasket, and hard wedge facing that minimizes seizing, galling, and abrasive wear. Stainless steel gland bolts and nuts prevent freezing or corrosion. The 2-piece gland and follower applies uniform pressure on packing. Available in ¼, ⅜, ½, ¾, 1, 1¼, 1½, and 2-in. sizes.—R-P&C VALVE DIV., AMERICAN CHAIN & CABLE CO., INC., READING, PA.



Magnifying viewer

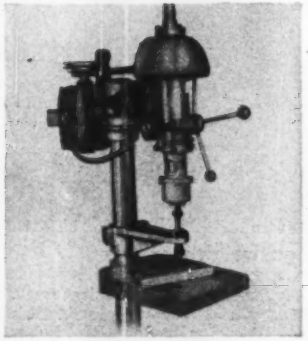
Rectangular reading instrument magnifies images making it easier to read small lettering and type. Made of a transparent plastic material, it is available in various lengths to suit specific applications. The 2X Magna-Vue instrument features pre-focused double magnification.—THE ALSTON CORP., P. O. BOX 146, HOLLYDALE, CALIF.



Reproduction paper

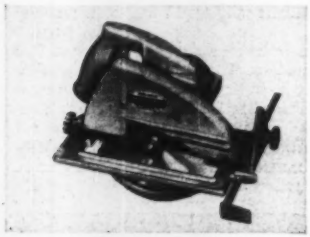
Kodagraph Autopositive Paper, Translucent, is described as a tough, durable, highly translucent drawing reproduction paper. Lines are said to erase readily when moistened. The paper can be used with regular reproduction equipment and in ordinary room light. It is supplied in standard roll and sheet sizes and in widths up to 42 in. — EASTMAN KODAK CO., ROCHESTER 4, N. Y.

(*Continued on next page*)



Screw-tapping attachment

Lead screw tapping attachment consists of a support arm, support-arm clamp, support-arm screw, support-arm washers, lead screw, split nut, split-nut mounting screws, split-nut washers, lock assembly, and Jacobs Rubberflex collet and nut. Split nut and lead screw are interchangeable for different threads. The assembly is provided as an attachment to any standard drill press. Taps from 0 to ¼ in. may be used without changing the collet.—AUTOMATIC METHODS, INC., ROOM 106, 42 WALNUT ST., NEWARK 1, N. J.



Portable 6¼-in. saw

Circular saw has a 6¼-in. blade that cuts through 2-in. stock on a 45-deg angle. Features of the Ramsaw include a built-in bevel and depth adjustment, ¾-hp motor, plastic window in the guard that allows the user to see the line of cut, and an adjustable rip fence that extends to 8 in. for precision ripping.—MASTER-TAPER CO., 4531 N. BEACON ST., CHICAGO 40, ILL.

Anti-corrosive compound

Corrosanti Grade B compound is especially prepared for the protection of ferrous metals subjected to water and water vapor. Acting as a rust inhibitor, it penetrates rust formations that cannot be readily removed. It is said to cause the rust to flake off. Upon

(*Continued on page 122*)

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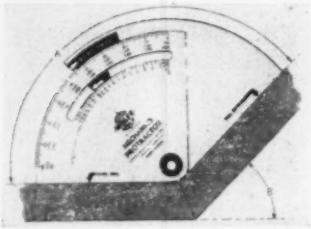
reaching bare metal, it closes the metal pores, preventing further rusting. Corroxanti is applied with a short, stiff-haired brush and will cling to wet or rusted surfaces. It can be applied under water as well.—Dr. Adolph Schror, 52 Cambridge St., East Orange, N. J.

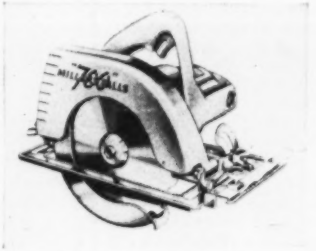
Mechanics' protractor

Helpful tool offers a practical solution to on-the-job angle-measuring problems up to 180 deg. One setting gives: Readings for outside angles (such as angle of bend, or deflection); readings for inside angles; and inches-per-foot against degrees, up to 24 in.-per-foot (63 deg 26 min). The protractor is constructed of Vimylite plastic.—Interstate Sales Co., 123 E. 18th St., New York 3, N. Y.



Lightweight engine

Gasoline engine (Model K7-1) is easily transported by car or light truck. It has a total weight of 38 lb. This 350-watt engine develops 2 hp. Power is transmitted by a flexible shaft drive. It is recommended as an all-purpose unit.—Kohler Co., Kohler, Wis.



Portable 7-in. saw

Light weight (11 lb), high capacity (2⅜ in. at 90 deg), and fine balance are features claimed for the No. 700 7-in. saw. It will make a 45-deg mitre cut in finished 2-in. lumber. Power is provided by a ½-hp motor. Using abrasive disks, the 700 can be used for cutting metals, concrete, and tile.—Millers Falls Co., Greenfield, Mass.

Danger-sign standard

Angle-iron frame of sign standard opens into a wide base to prevent tipping or blowing over. It weighs 13 lb, and when folded, locks the warning sign in place. Size is 27x18 in. Reflectorized signs are available. Mounts are included for installing two red flags.—Eastern Metal of Elmira, Inc., Elmira Heights 2, N. Y.

(Continued on page 124)

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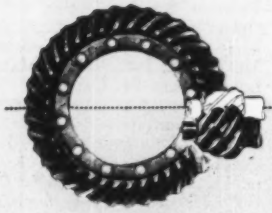

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Aluminum paint—Technical bulletin sheet itemizes and explains six main advantages claimed for Prufcoat aluminum paint. Miscellaneous data on use and handling of this material is included.—PRUFCOAT LABORATORIES, INC., 50 E. 42ND ST., NEW YORK 17, N. Y.

Water-measuring equipment—Bulletin 311 (20 pp) describes a complete line of the latest water-measuring equipment. Items listed in the catalog for the first time are the Sparling saddle mounting for reinforced concrete pipe, Flow-Rate control and Twist of the Wrist valve, level and Open-Flow indicator, and indicator for 1 to 33 Flow-Range.—SPARLING METER CO., INC., 945 N. MAIN ST., LOS ANGELES 54, CALIF.

Torque converters—Principle of operation of torque converters is fully explained in PRODUCTION ROAD, a publication of the Twin Disc Clutch Co. The discussion is amplified by illustrative drawings and photographs of component parts.—TWIN DISC CLUTCH CO., RACINE, WIS.

Air conditioning—Practical pointers on air conditioning are contained in 16-p Catalog 1059. It covers all phases of air treatment and air handling. The booklet describes the properties of air, the problems of its con

(*Continued on page 126*)

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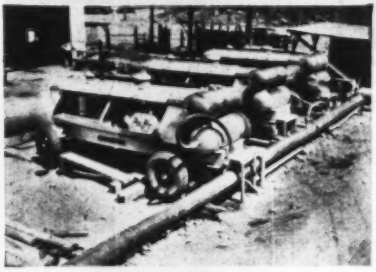

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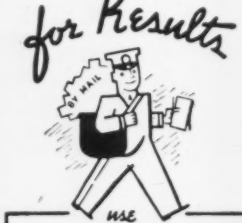

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Mfgrs' publications . . .

trol, and the application of diversified types of equipment to solve these problems.—United States Air Conditioning Corp., 3300 Como Ave., S. E., Minneapolis 14, Minn.

Perimeter insulation – Twenty-page booklet contains information on perimeter insulation for standard heating systems. It features diagrammatic sketches illustrating proper method of installing the insulation. The booklet explains the theories involved in perimeter insulation, and illustrates how Fiberglas products help provide a desirable effect.—Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Drainage plumbing products–Catalog GS-2 is a ready reference guide listing a complete line of plumbing drainage products approved for use in government buildings and marine construction.—Josam Mfg. Co., Dept. 360, 1302 Ontario St., Cleveland 13.

Fire extinguisher guide–General line folder covers a complete line of portable and special-purpose fire extinguishers. A handy chart provides an easy-to-use guide for selecting the right extinguisher for every type of fire hazard.—Stop-Fire, Inc., 125 Ashland Place, Brooklyn 1, N. Y.

Stirs coal men to action on pollution

The Ohio River Valley Water Sanitation Commission met recently in Cincinnati with 50 representatives of coal producers in its eight-state area to encourage action by the coal industry toward curbing mine-acid and other stream polluting wastes.

Aims and purposes of the commission were described by its chairman, Henry Ward, who pointed out gratifying progress toward abating pollution that steel, chemical, pulp and paper industries have already made. Similar effort by the coal industry is sought.

By noon, commission representatives had said their piece. Discreetly, they excused themselves with the hope that coal men present might wish the afternoon for discussion.

Some 35 stayed on for a general discussion of their pollution problems. But those present concluded they had no authority to take definite action. They decided to have one of their number write each coal producing organization in the Ohio Basin, inviting it to send a duly authorized representative to a future meeting in Cincinnati at which a course of action is to be determined.

ADVERTISERS IN THIS ISSUE

A

Aero Service Corp. 37
Aeroquip Corp. 56

B

Bay City Shovels, Inc. 8
Belmont Irons Works 53
Berger & Sons, Inc., C. L. 2
Bethlehem Steel Co. 46
Bucyrus-Erie Co. 34, 64, 65
Butler Bin Co. 79
Byers Co., A. M. ..... 2nd Cover

C

Cement Gun Company 66
Chapman Valve & Mfg. Co. 58
Chicago Pneumatic Tool Co. 74
Cities Service Companies 61
Complete Machinery & Equip. Co. 97
Continental Steel Corp. 54

D

Detroit Diesel Engine Div., General Motors Corp. 15
Douglas Fir Plywood Assn. 94, 95
Dow Chemical Co. 16
Dravo Corp. 50, 70
Dresser Mfg. Div., Dresser Ind. 6

E

Electric Tamper & Equip. Co. 20
Eppinger & Russell Co. 59

F

Fairbanks-Morse Co. 59
Ford Motor Co. 49
Four Wheel Drive Auto Co. 73
Foundation Equip. Corp. 82

G

Gardner-Denver Company 125
Georgia-Pacific Plywood Co. 76, 77
Goodyear Tire & Rubber Co. 1
Great Lakes Carbon Corp. 122
Griffin Wellpoint Corp. 53
Gunite Concrete & Construction Co. 71
Gunite Construction Co. 93

H

Hendrick Mfg. Co. 66
Hendrix Mfg. Co. 31
Hewitt-Robbins Inc. 51

I

Imperial Pencil Tracing Cloth 75
International Harvester Co. 42
Irving Subway Grating Co. 81
Irvington Form & Tank Corp. 59

J

Joy Mfg. Co. 57

K

Koppers Co., Wood Preserving Div. 54

L

Laclede Steel Co. 82
Lamson & Sessions Co. 9
Layne & Bowler, Inc. 84
LeRoi Company 12, 13
LeTourneau, Inc., R. G. 4
Lima-Hamilton Div., Baldwin-Lima-Hamilton Corp. 45
Lock Joint Pipe Co. 52
Louisville Cement Co. 119
Lull Mfg. Co. 91

M

M & H Valve & Fitting Co. 62
MacArthur Concrete Pile Co. 50
Mack Trucks, Inc. 7
Marion Metal Products Co. 124
Master Builders Co. ..... 3rd Cover
Maxon Construction Co., Dumpcrete Div. 71
McKiernan-Terry Corp. 63
Mott Core Drilling Co. 71
Murphy Diesel Corp. 5

N

Naylor Pipe Co. 14
Northwest Engineering Company 3

O

Ohio Locomotive Crane Co. 53
Owen Bucket Company 121

P

Pennsylvania Drilling Co. 81
Pittsburgh-Des Moines Steel Co. 97
Portland Cement Assn. 41
Pressure Concrete Company 81

R

Raymond Concrete Pile Co. 11
Rogers Bros. Corp. 10
Ryerson & Sons, Inc., Jos. T. 93

S

Sauerman Bros., Inc. 53
Spencer, White & Prentis, Inc. 97
Sprague & Henwood, Inc. 72
Standard Steel Corp. 72
Stang Corp., John W. 62

T

Texas Company ..... 4th Cover
Timken-Detroit Axle Co. 123
Timken Roller Bearing Co. 69
Tinney Drilling Company 59
Torrington Co., Bantam Bearings Div. 55
Trailer Village, Inc. 93
Tri-Lok Co. 50
Tubing Appliance Co. 72

U

Unit Crane & Shovel Corp. 57
U. S. Pipe & Foundry Co. 80
Universal Atlas Cement Co. 22
Universal Manufacturing Co. 120
Universal Sewer Pipe Corp. 88

V

Vulcan Iron Works 78

W

Warner & Swasey Co. 18
Williams Co., J. H. 72
Wisconsin Motors Corp. 71
Wood Co., R. D. 67

Professional Services 117

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT
Positions Vacant 106, 107, 108
Civil Service 106
Selling Opportunities Offered 107
Positions Wanted 108
Employment Agencies 108
Employment Services 108

EDUCATIONAL
Schools 108

NOTICES
Auction 109
Proposal 102, 103, 104, 105

PROPERTY
Wanted 108

EQUIPMENT
(Used or Surplus New)
For Rent 117
For Sale 109-117
Piling 116
Pipe 116
Rail 114
Surveying Instruments 109

WANTED
Equipment 109

ADVERTISERS INDEX 109

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PERSPECTIVE

Builder of public projects . . .

The Port of New York Authority

Thirty years ago the states of New York and New Jersey set up the Port of New York Authority to coordinate development work in the great harbor at the mouth of the Hudson River. The name "port authority" was borrowed from our British cousins, being in common use in England but practically unknown here at that time.

One of the main objectives of the port authority was integration of railroad freight lines serving the New York metropolitan region, most of which had terminals in New Jersey and reached Manhattan, Brooklyn and Long Island City only by means of car floats or lighters. At that time, motor trucks were only beginning to be a factor in freight movement.

• **The "Comprehensive Plan"**—As an initial step in this coordination a "Comprehensive Plan" prepared by a staff of engineers, was made a part of the legislation setting up the port authority. It visualized an outer belt railway line, an inner belt line and an elaborate automatic freight transport system extending from the principal freight yards in New Jersey under the river and through underground loop lines serving Manhattan. There also was to be a long railroad tunnel right under the harbor to Brooklyn.

In those early days of the port authority, representatives of that agency spoke of this "Comprehensive Plan" in awed tones. Any suggestion that changes could be made in it was looked on as heresy.

• **Days of struggle**—Those early days for the port authority were days of struggle and frustration. It did finally succeed in getting the railroads to piece together some rail lines back of the New Jersey waterfront to form a part of the "Inner Belt Line." But that was as far as the "Comprehensive Plan" ever was carried out, due in large measure to an agency of transportation of unknown possibilities when the plan was drawn—the motor truck.

Actually, it was the humble motor truck that finally put the port authority on its feet financially and at the same time relegated the venerated "Comprehensive Plan" to the scrap heap.

This came about through completion of the Holland Tunnel as a joint undertaking of bridge and tunnel commissions set up in each state some years before the Port Authority was created. That tunnel was opened to traffic late in 1927. Three years later the two states abolished the commissions and turned the tunnel over to the Port Authority. Traffic through the tunnel had increased rapidly during those three years, especially truck traffic, with the result that income was well above operating costs and bond requirements. Thus the Port Authority was assured of a substantial and increasing income.

• **Builder of bridges**—The same growth in motor vehicle traffic that made the Holland Tunnel a sound financial venture right from the start was also making it evident that more highway crossings were needed over the water barriers between New York and New Jersey. And quite naturally, the two states turned to the Port Authority as the best available agency to build them. As a result, the authority found itself launched almost simultaneously into building the great George Washington Bridge over the Hudson River and three large bridges between Staten Island and points in New Jersey. All were to be toll facilities.

Planning for the highway routes across Staten Island from the New Jersey end of the Holland Tunnel that called for a bridge from Bayonne to Staten Island and two bridges from that island back into New Jersey was not properly coordinated with New Jersey's plans for the toll-free Pulaski Skyway. As a consequence, those bridges did not prove to be money makers.

Two of the Staten Island bridges went into service in 1928 and the third in 1931. The George Washington Bridge also was opened in 1931.

Because of the growing traffic volume through the Holland Tunnel, work on the first tube of the Lincoln Tunnel was begun in 1934. A second tube was completed in 1945 and plans for a third now are under way.

• **Inland freight terminal**—Turning back to its original objective, the Port Authority, in 1932, completed its inland freight terminal, occupying an entire block on Manhattan Island, as a substitute for the underground belt lines of the "Comprehensive Plan." There freight shipments are consolidated for movement by truck to rail yards in New Jersey. More recently the Port Authority built two truck terminals, one in Newark and one in New York, for the consolidation of freight being handled entirely by long-haul truck operators.

• **Bus Terminal**—Latest, and in many respects most unique of the Port Authority's ventures into service to highway transport, is the great bus terminal completed in 1950 at a cost of $24,000,000.

This new facility, with ramps providing direct connections to the exit and entrance plazas of the Lincoln Tunnel, has completely freed the streets of New York of the movement of nearly 5,000 buses.

• **Airport operator**—Not mentioned in the "Comprehensive Plan" was the possibility that passengers and freight would move into and out of the port of New York by air, yet as the 30-year period drew to a close the Port Authority found itself operating and expanding all of the port's principal air transport facilities.

A curious sidelight on this 30-year history is the fact that the Port Authority today has little more to do with the vast amount of shipping that moves in and out of New York harbor than it had in 1921. In that respect it is completely unlike the great British agencies from which it took its name. The Port Authority operates a large grain terminal and lumber pier in Brooklyn and operates Port Newark on Newark Bay in New Jersey. But that is about the limit of its waterborne traffic activities. In airborne traffic in and out of the port of New York, however, it is supreme.

In the 30 years since it was set up the Port Authority has spent $371,000,000 for construction of bridges, tunnels, airports and truck or bus terminals. None of that money came out of the public till. By wise financial management the authority has been able to raise all the capital needed for its construction projects by the sale of its own bonds. This country would be better off if more public project were built this way.

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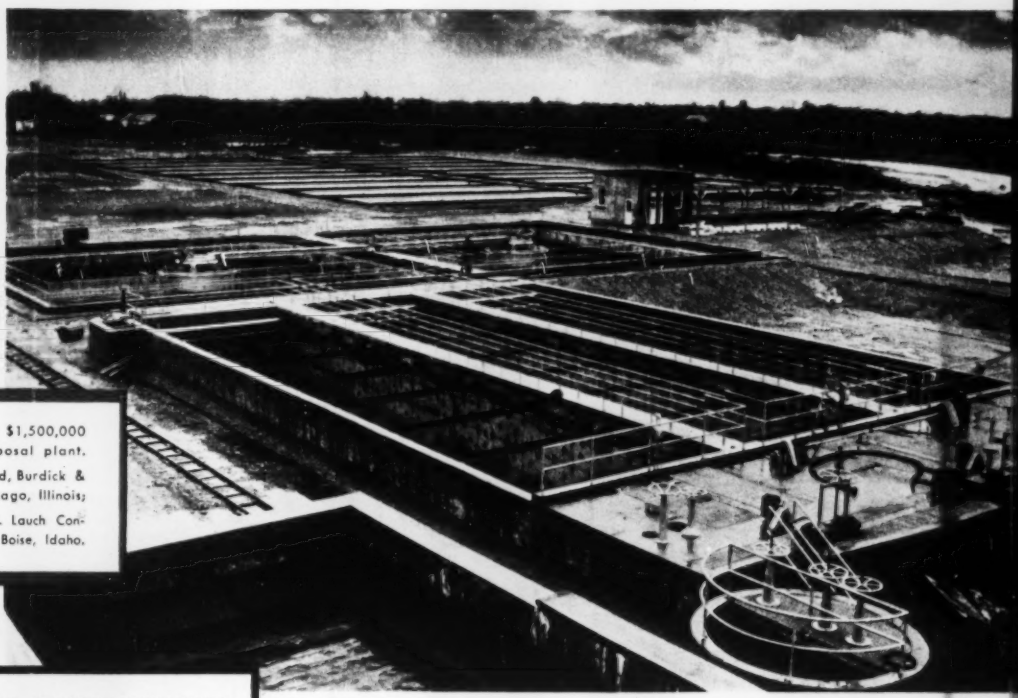

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